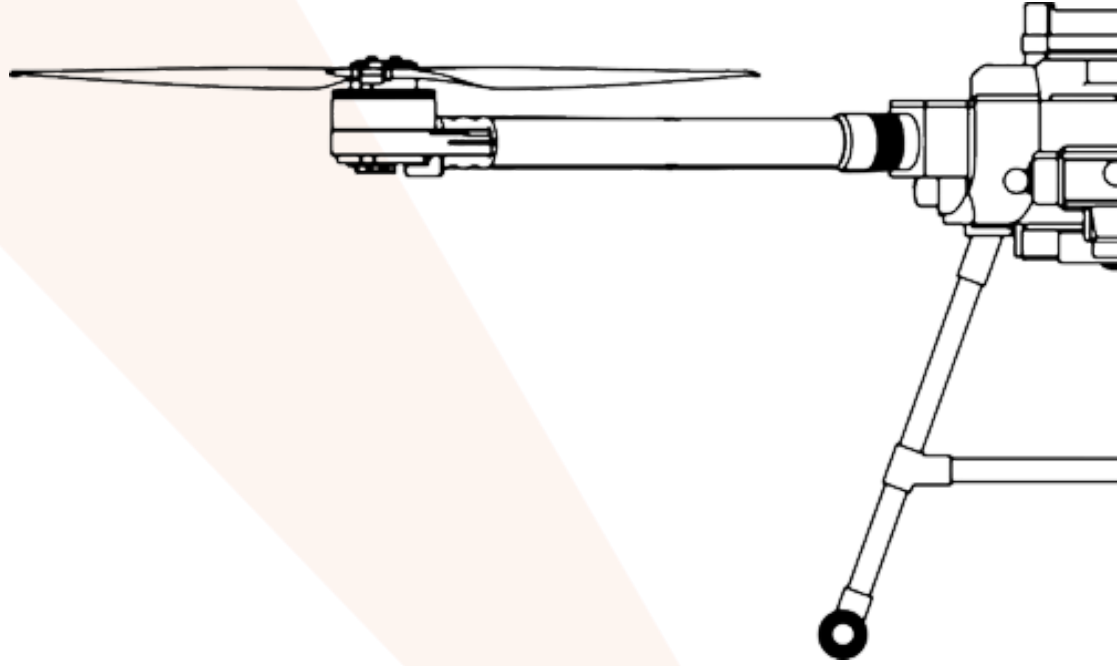# ABZ INNOVATION
WE BUILD DRONES.

C10

OPERATOR MANUAL

Version 2.1.1.

General Information

Overview

This manual is for the ABZ Innovation C10 cleaning drone, which can be upgraded with a high-pressure washing machine pipe as its payload.

The drone and its accessories may only be operated in accordance with the instructions in this manual.

Please read this notice and the manual provided for your ABZ Innovation C10 drone before use. If you have any questions, please contact ABZ Innovation customer service before use. The contact details can be found at the end of this document. By using the drone, you declare that you have read this manual, that you understand and acknowledge the information contained herein, and that you consent to use the drone only under proper conditions, in full compliance with applicable laws and the instructions in this manual. Furthermore, you agree that you are now exclusively responsible for the drone and its operation, and for any direct or indirect legal consequences arising from its operation.

The ABZ Innovation C10 drone is NOT a toy and is to be used only with care. Improper use of the drone poses a serious risk and can cause damage to the drone and its surroundings, severe personal injury or death. The drone may only be used by qualified pilots. For optimal efficiency and safety, the drone should be operated by a team of two people. The ABZ Innovation C10 is a technical, industrial device.

Any modification to the drone, its components or software will immediately void the warranty.
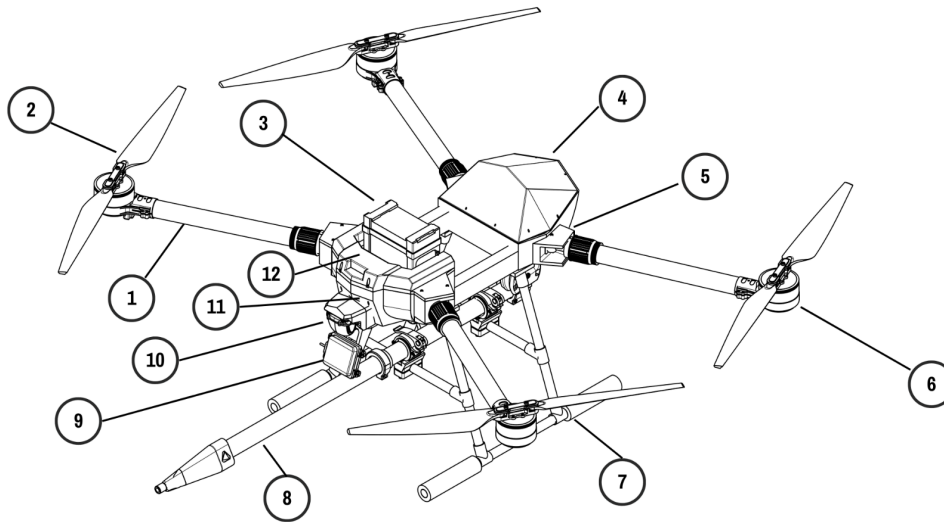
The drone can be purchased either as a standalone unit or equipped with the high-pressure washing system supplied by the manufacturer.

Customers must ensure that any chosen washing system complies with the drone's technical parameters. Failure to do so may result in operational failure, physical damage to the drone, and increased risk of personal injury.

ABZ Innovation Kft.	
Model: C10	CE
S/N: 1759FABZC10SB2500001	
Input: 44.4V ⎓ 55A	
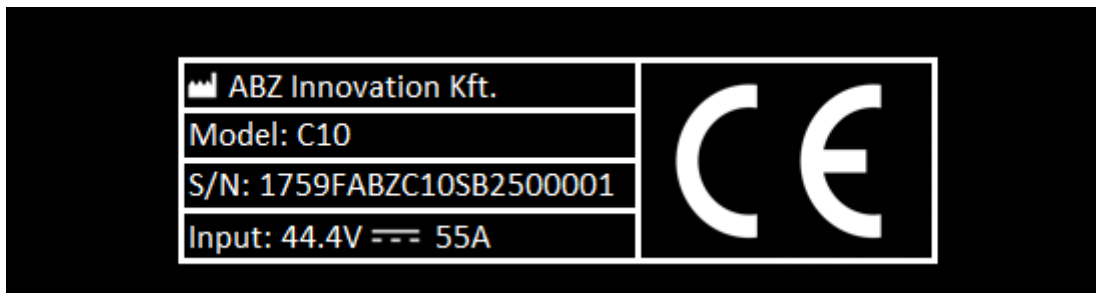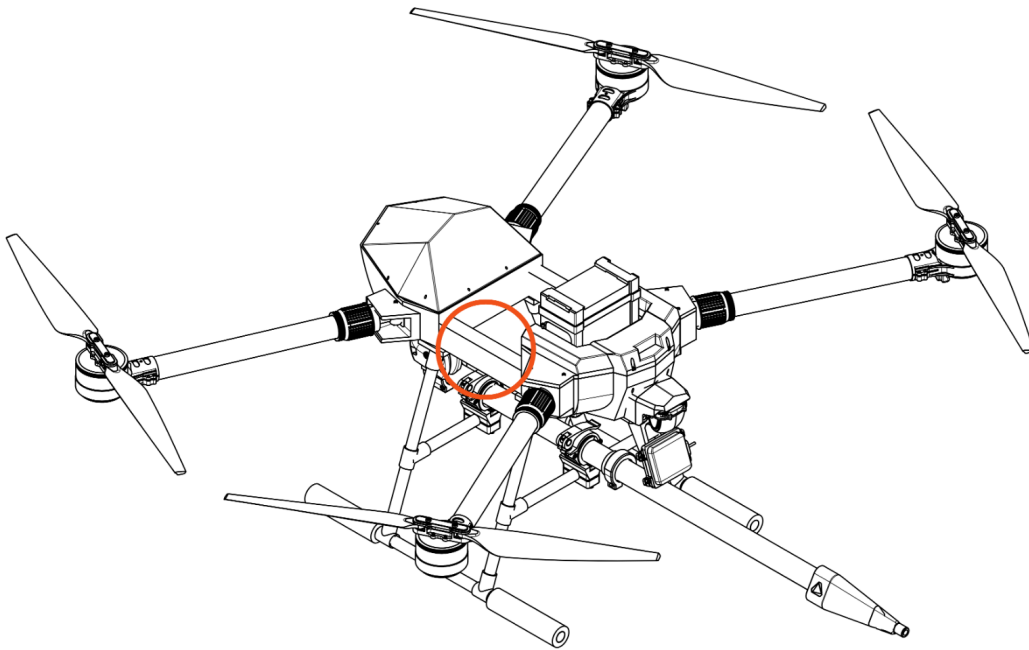
To identify a C10, locate the serial number label on the right side of the drone frame and check if the „Model" is C10.

Drone main parts

1: Arms	7: Landing gear
2: Propellers	8. Cleaning lance
3: Battery	9: Radar
4: Rear cover	10: Camera
5: RC antennas	11: Front cover
6: Motor	12. Battery connector

The high-pressure washing system provided by the manufacturer is fully optimized for the drone's capabilities. The water-filled hose remains within the approved payload limits, and its length supports effective operation at washing heights of up to 60 meters.

Customers must ensure that any chosen washing system complies with the drone's technical parameters. Failure to do so may result in operational failure, physical damage to the drone, and heightened risk of personal injury.

Packing list

The C10 drone standard package contains:

- C10 drone
- Drone lance
- Interchangeable nozzle
- ABZ Innovation MK15 remote controller with sticks and antennas
- 20 W fast charger and cable for remote controller
- US/EU plug converter for the fast charger
- USB-C / USB-A converter
- Carrying case for the remote controller

Specifications

Max. Take-off Mass (MTOM)	29 kg
Max. payload weight	12.54 kg
Max. summarized weight of accessories and batteries and payloads	16.74 kg
Dimensions arms, propellers unfolded	1460 x 1020 x 610 [mm]
Dimensions arms unfolded, propellers folded	1380 x 940 x 610 [mm]
Dimensions arms and propellers folded	780 x 500 x 610 [mm]
Flight precision	GPS/RTK
Battery integration	Quick connector
Drone frame	Folding frame
Range of RC	3,5 km
Flight speed (working)	3m/s
Airspeed (maximum)	13m/s
Max. tolerable wind speed	10m/s
Radio Control and Telemetry band	2,4 GHz
WLAN frequency band	2,4 GHz

Safety requirements

Child protection provisions

- This equipment is not suitable for use in places where children are likely to be present.
- The equipment must be kept out of the reach of children.
- The equipment operates rotating parts that are dangerous for children and must be kept out of the reach of children!

Operating conditions

- For optimal efficiency and safety, drones should be operated by a team of two people.
- It is forbidden to operate the drone or any of its components in an enclosed space.
- In all flight modes including take-off and landing, the pilot must comply with all safety requirements and the technical conditions must be met.
- Do not fly over or near people.
- When recording a video or picture, the privacy and property rights must be met. Recordings are only allowed with authorization of every involved person, including private property.
- The operator must use a Drone Remote Identification (RemoteID) device to comply with legal requirements.
- Maintain flight altitude below 60 m above ground level.
- Fly only in moderate weather conditions, between temperatures of 5°C and 45°C (41°F and 113°F).
- Do not fly in rain, hail, or in higher relative humidity than 80%.
- Avoid contact with any solid objects or animals during flight, even smaller particles (excessive sand, dust, or swarm of insects) can cause damage to the propellers, when contacting at high (rotational) speed.
- The pilot must ensure that during the entire flight, VLOS conditions are assured. Flight in excessive fog, dust, etc. is prohibited.
- In dark lighting conditions the pilot must reduce the maximum flight distance to a limit, where the drone and its orientation is safely determined based on the light of the LEDs.
- Your flying activities must not violate any applicable laws or regulations. You must have all necessary permits. Contact the appropriate government agency or authority before flying to ensure that you are operating your drone in compliance with laws and regulations.

Operation

- The drone may only be switched on and operated in accordance with the "Flight Protocol" chapter starting on page 47.
- Only use the drone in full compliance with the checklists.
- Stay away from rotating propellers and motors.
- Do not exceed the maximum combined accessories and batteries and payload weight in any case. Otherwise, the drone may be damaged and the flight might pose danger.
- Always keep the drone within visual line of sight (VLOS) and keep an eye on it.
- Don't get distracted by using your mobile phone or any other activities.
- Don't fly under the influence of alcohol, drugs or medicines. Fly only when you are mentally and physically capable of safely controlling the drone, including paying attention to its surroundings.
- If the drone or remote controller battery is low, land the drone in a safe place. The state of the drone battery should be monitored before the flight using the charging indicator LEDs on the battery. We recommend starting the flight with a minimum of 80% battery charge.
- During the flight, the pilot must monitor the battery voltage, which should always be above 43.5V, even when flying with the Maximum Take-off Mass (MTOM). The ABZ Control battery indicator icon serves only as an indicator and shows an approximate value.
- Never fly closer than 100m of a high voltage power line or high-power radio emitters (e.g. Radar, TV/Radio station).
- After landing, switch off the motors, switch off the drone by disconnecting the battery, and then switch off the remote controller.

Maintenance and storage

- Do not use damaged, broken, or aged propellers.
- Regularly check the condition of the drone and make a flight log.
- To avoid damage to the drone's landing gear, remove payloads, accessories and the battery before transportation.
- Clean the drone, especially the propellers, after use.
- Recommended storage temperature: between 5°C and 40°C (41°F and 104°F) applicable for the drone, as well as the remote controller and the batteries.
- Never store the remote controller or the drone's batteries below 0°C, it will cause excessive degradation to the battery cells.
- Store the drone, remote controller, and batteries below 60% relative humidity.
- The remote controller and the drone's batteries must be stored at about 60% charge.
- Batteries deplete after extended storage. The remote controller and the drone's batteries must be discharged and recharged every 3 months of storage.
- After long-term storage:
  - Every battery must be inspected and fully charged before use.
  - The drone's motors must be inspected for free rotation.

Drone handling and use precautions

- Before commencing each flight, plan your drone's flight path with care and attention. Pay attention to the following:

  - working at a suitable time of day,
  - weather conditions,
  - environmental influences (such as sunlight),
  - drifting of the drone in case of wind,
  - wind speed,
  - flight altitude,
  - Make sure there are no obstacles in the work area between the pilot and the operated drone.

- The equipment is powered by a replaceable battery. Make sure the batteries are in good condition and fully charged. Do not use faulty or damaged batteries. To learn about proper use and storage, please read the battery's instruction manual.

- The batteries can be charged using an external battery charger. To use this, please refer to the battery charger's instructions for use.

- The battery performance varies by the temperature, always pay attention to this phenomenon and follow the battery's instruction manual. Operate or charge the batteries only between 5°C and 45°C ambient temperatures, while the battery's temperature remains between 10°C and 60°C.

- Battery discharge is not linear, depending on load, temperature, internal resistance, and condition of cells. This figure shows the typical discharge curve for a drone battery in 90% state of health, at 40°C at 7,5C load:
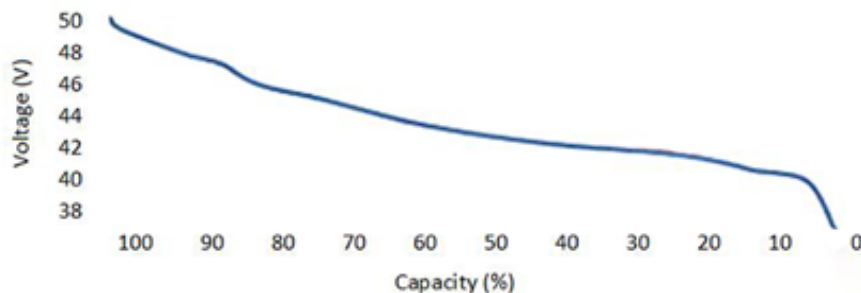
- The maximum masses of accessories/batteries/payloads combined, fitted to the drone must not exceed 16.46 kg, thereby the drone's overall mass must not exceed the Maximum Take-off Mass (MTOM), 29 kg.

- The drone's maximum flight time with a single battery is primarily determined by its Take-off Mass, which is directly affected by the hose's filled length and the operational altitude. Under standard operating conditions, a single battery delivers approximately 18 minutes of flight time.

- Payloads—especially an attached lance—can significantly affect the drone's stability and maneuverability. Pilots should exercise increased caution, as these changes may result in slower response times during acceleration, braking, turning, and altitude adjustments.

Information about transport

The drone is designed for outdoor work. The drone can be delivered to the site in the trunk of a vehicle, in the loading area of a truck, or in a trailer. Always apply the protective foam fixations to the propellers before moving the drone with folded arms. Proper anchorage is an important prerequisite for the safe transport of the drone, as it is done on uneven road surfaces and on various terrains. Securing the drone improperly can cause damage such as deformation and ultimately breakage of the propellers, damage, punctures, damage to the fastenings, payloads, etc...

Transporting the equipment requires extra care and attention. Improperly secured equipment and accessories necessary for its operation (drone, drone batteries, battery charger, generator, etc...) can lead to damage, which may ultimately lead to total equipment failure. Therefore, please carefully secure the drone during transport and store its accessories in a suitable place.

In case of loss of signal and communication

The ABZ Innovation L10 drone's software is equipped with safety features that ensure safe operation at all times. These include possible loss of signal and communication. This can occur when the drone signal is out of range, obstructed by a hill or building, or affected by interference from nearby equipment, electronic devices, or magnetic sources. In these cases, the drone will communicate clear instructions to the operator while the software initiates safety functions. The safety features can be set before take-off, telling the drone what to do if the drone loses signal.

These options can also be set with the following:

- Returning to the starting point (Return to Launch – RTL)

- Stopping at the point of signal loss

- Keeping the height

- Landing

- Climbing to the set altitude and return home

If the drone loses signal from the remote controller, or the communication between these are interrupted, on the remote controller's screen the following message will appear: „COMMUNICATION LOST" and it will read it out loud (if the volume is not muted).

The drone and the remote controller will try to recover the connection automatically. However, if possible, it is highly recommended for the pilot to move the remote controller closer to the drone, especially if any obstacles (e.g. building, tree, or a hill) are in between, and also if the

communication between the remote controller and the drone is recovered, take back manual control of the drone (e.g. switching to Loiter mode).

In the event of a crash, the drone typically disarms itself. However, if the rotors are still spinning, the pilot should attempt to activate the Motor emergency stop (by pressing the C and D buttons simultaneously), even if the 'Communication Lost' message is displayed.

Never approach an armed drone!

Operational Safety

Understanding the environmental and equipment-related factors that can impact your C10 washing drone's performance is crucial for safe and effective operation.

Due to the emergency push function, it is dangerous to attempt take-off or landing with the Automatic Distance Control System activated. Never arm the drone, attempt to take off, or initiate landing while the system is active (status: ON).
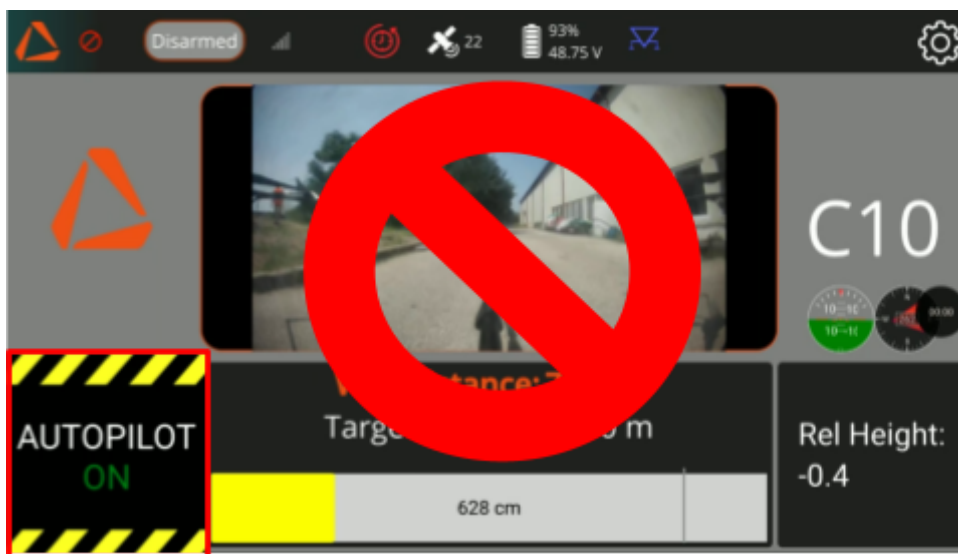
Always ensure that the system is in the Disabled or OFF status before arming the drone and taking off. Before landing, always turn OFF the Automatic Distance Control System by setting the right-side 3-position switch to the up position.

- **Drone Stability in Wind:** While the C10 platform handles constant wind speeds well, strong gusts can displace the drone by 10-30 cm before it can compensate. Always account for this potential instability. For optimal conditions, you should operate in calm weather or with light, steady winds. The recommended wind strength is less than 30 km/h.

- **Water Jet Focus in Wind:** Increasing wind speeds significantly weaken the focus of the high-pressure water jet. In windy conditions, the cleaning effect becomes ineffective at distances beyond 20-30 cm from the nozzle. If you observe this loss of focus, the wind speed is too high for safe operation. You must immediately stop the washing process.
- **Wall Surface Integrity:** Leaky, broken, or incomplete wall surfaces can weaken the radar signal, which can negatively impact the drone's automatic distance-keeping capabilities. As a solution, if radar-based ranging becomes unreliable, an experienced pilot may need to switch to manual flight operation.
- **Protruding Obstacles:** Be aware of any obstacles protruding from the wall surface, such as vents, signs, or structural elements. These can interfere with the drone's flight path or entangle the hose.
- **Hose Entanglement:** Hose entanglement during flight is a significant safety hazard. The best practice is to ensure the hose is always free of knots and can move without restriction in all directions before and during operation.
- **Hose Weight and Altitude:** As the drone ascends, the increasing weight of the extended hose creates a greater downward force and can affect the drone's responsiveness due to inertia. To minimize this effect, it is recommended that operations stay below a 30-meter altitude.
- **Hose Position and Lateral Force:** The position of the high-pressure washing system on the ground relative to the drone can cause the hose to exert a lateral (sideways) pull. This can cause the drone to rotate unexpectedly, which is a safety hazard, especially when operating close to a surface.

  For optimal positioning to minimize lateral pull, mark a 6-8 meter wide section of the wall to be washed and position the hose system in the middle of that section on the ground. Keep the drone within a +/- 3-4 meter horizontal range from the ground system's position as you move up and down the washing area.

Mandatory Remote identification with Dronetag

For security reasons, remote identification of drones is mandatory in the United States and the European Union. All drones must be equipped with a Remote Identification device to locally transmit information about the operating drone.

The L10 V2 drone comes equipped with a Dronetag DRI Remote ID module and meets the requirements of the legislation of the European Union[1] and the United States[2].

The Remote ID of your drone is its serial number, which is broadcast from the device during flight. The drone's system prevents takeoff if the Remote ID is not functioning.

The **RID icon** shows the operational status of the Remote ID system. If the icon is green, the Remote ID is broadcast correctly.

If the RID icon is red, it indicates that the Remote ID broadcast is not functioning properly.

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[1] Commission Implementing Regulation (EU) 2019/947
(https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0947)
[2] 14 CFR Part 89 – Minimum Performance Requirements for Standard Remote Identification of Unmanned Aircraft
(https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-89)

By clicking on the icon, you can check the health of the systems providing the necessary data for the Remote ID module.

The **ARM STATUS** field provides feedback about the proper functioning of the location source hardware and software of the drone. In the case of a malfunction, this icon will turn red, and consequently, the Remote ID icon will also turn red, indicating a malfunction in the Remote ID system. The drone will also provide an error message stating that the Open Drone ID has encountered a problem (e.g., not receiving a location message).

The **GCP GPS** field provides feedback about the proper functioning of the Transmitter radio GPS (hardware and software). In the case of a malfunction, this icon will turn red, and consequently, the Remote ID icon will also turn red, indicating a malfunction in the Remote ID system. The drone will also provide an error message stating that the Open Drone ID has encountered a problem (e.g., not receiving a location message).

The **RID COMMS** field provides feedback on the proper connection between the Remote ID module and the drone.

The **BASIC ID** field should always be green, indicating that the drone's serial number has been set up as Remote ID and is broadcasting.**If the Remote ID system experiences an error due to insufficient GPS coverage on the drone or the remote controller, or a hardware malfunction, the drone prevents arming.**
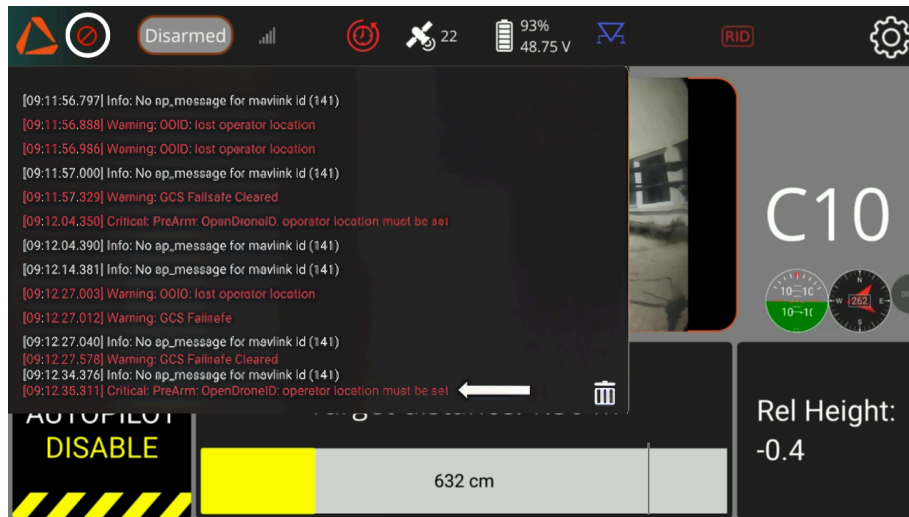
The drone continuously monitors the Remote ID functionality **from takeoff to shutdown** and provides a **notification of any malfunction or failure** in the top bar of the ABZ Control application. If the Remote ID system detects an error during flight, the RID icon will turn red, and the drone will provide an error message stating that the Open Drone ID has encountered a problem (e.g., not receiving a location message).

> **If the Remote ID system experiences an error during operation, the unmanned aircraft is no longer broadcasting the message elements of the standard Remote ID. [3]**

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[3] In the United States, the pilot must, in accordance with 14 CFR Part 89 (Minimum Performance Requirements for Standard Remote Identification of Unmanned Aircraft), land the unmanned aircraft as soon as practicable.

Declaring an Emergency

In the Remote ID interface, the pilot can click on the **Declare Emergency** button. To declare an emergency, you need to **press and hold the button for 3 seconds.** This function may be employed in situations such as loss of control, potential threats to persons or property, or in other emergency scenarios, at the pilot's discretion.
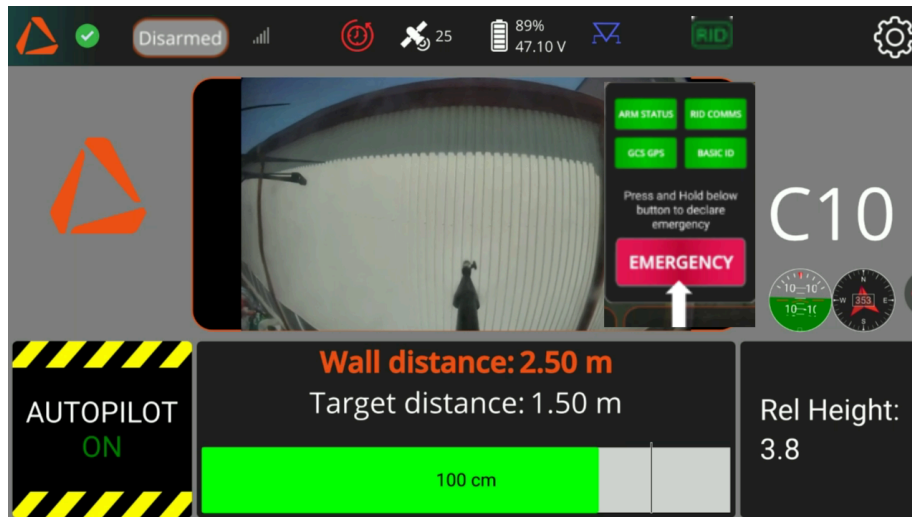
When an emergency is declared, the drone will broadcast the emergency status. To clear the emergency, press and hold the same button (which now displays the text **'Clear Emergency')** for **3 seconds.**
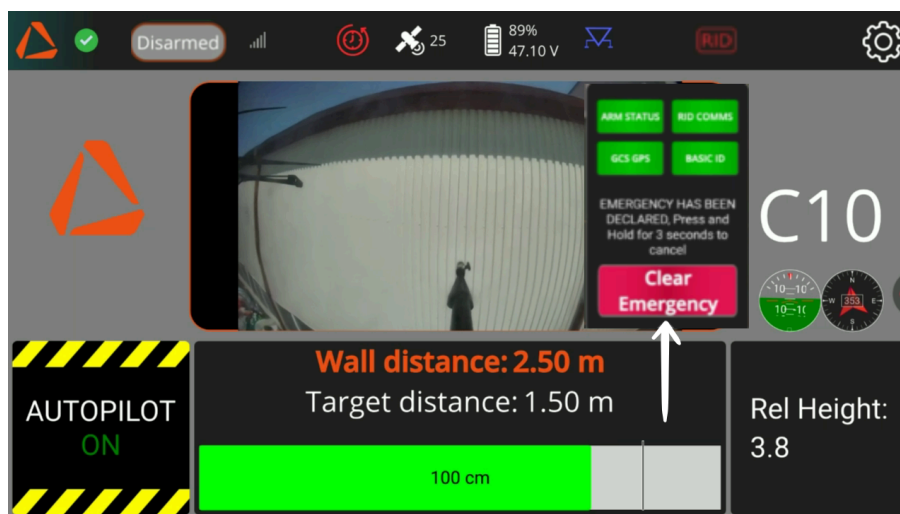
Remote Controller

The C10 is compatible only with the controllers provided by ABZ Innovation with specialized ABZ Control software. Every firmware/software combination is compatible with the drone. The available remote controller unit:

- ABZ Innovation MK15

Other devices or applications are not compatible for controlling the drone, therefore prohibited to use with the drone.

The MK15 remote controller is an Android operation system-based device, with an integrated system for communicating through radio signals with the drone. It runs the ABZ Control application to control the drone and let the pilot access all telemetry data and advanced flight planning.

If the remote controller is turned off, you can check the battery charge of the remote controller by a short push of the power button. The blue LEDs indicate the charge level. The single LED in front of them gives feedback about the connection between the drone and the remote controller. When the LED is green, the drone and the remote controller are connected.

To switch on the remote controller, push the power button once briefly and then once more for a longer duration (until you hear the system's sound signal).

You can only charge the remote controller when it is powered off and only with the supplied fast Charger. The RC cannot be charged while working.
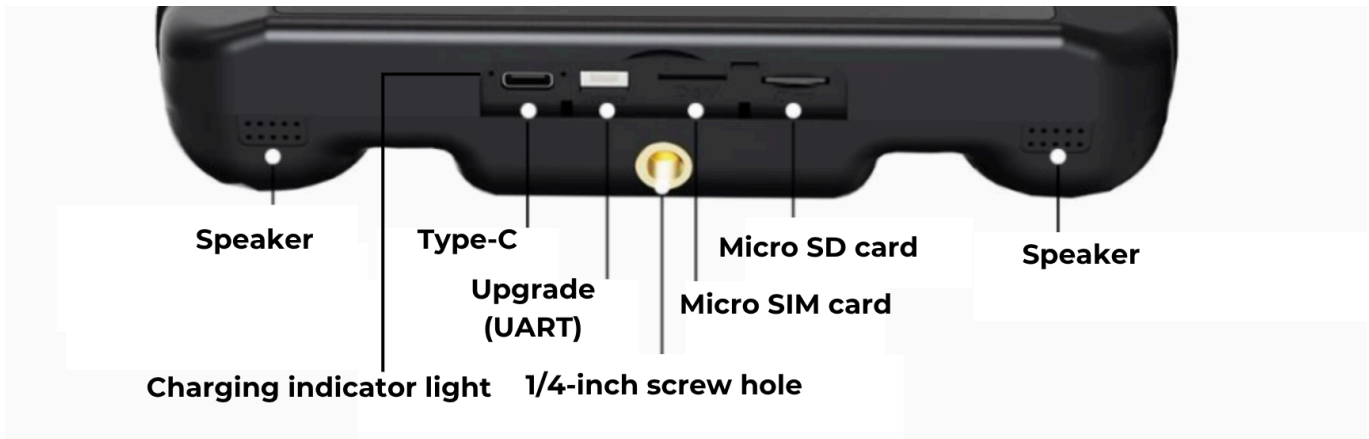
1. Connect the remote controller to the fast charger and plug it into the power supply.
2. The charging indicator lights are red when the ground unit is charging.
3. The charging indicator lights are green when charging is finished.
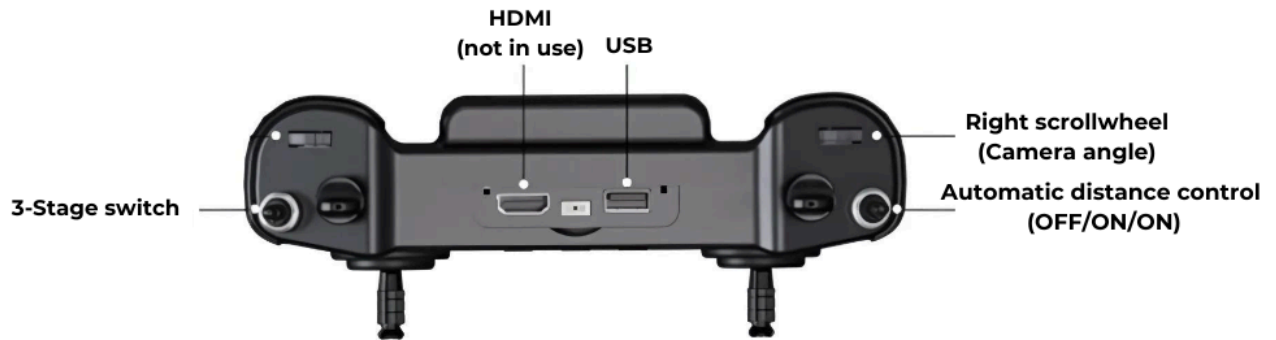

If you push the power button once short, the screen will turn off (power saving mode). If you push the button for 1 second, you can choose between the options of powering off the remote controller or taking a screenshot.

You can access the Android navigation bar by swiping down from the top of the screen or swiping from the right side of the screen.

The rectangular icon allows you to switch between applications. The circular icon takes you to the main screen. The triangular icon lets you go back to the previous screen (note: this function is not supported in ABZ Control).

The remote controller battery status is displayed in the Android menu (by swiping down from the top of the screen).
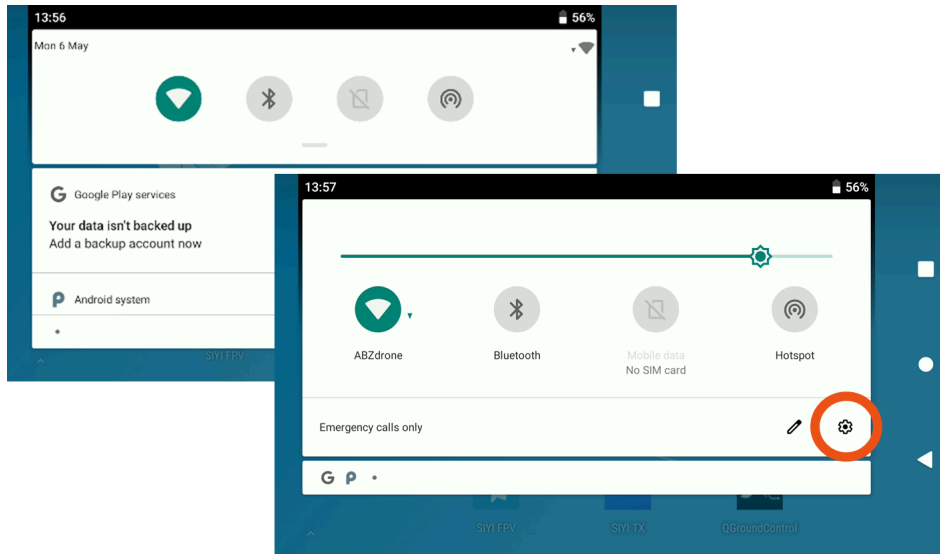
Set the **display brightness** and **sound volume** always according to environmental conditions (light conditions and noise level)! Setting the display brightness and sound volume is always accessible (even when operating the ABZ Control software) from the basic Android menu, swiping down from the top of the touch screen once, where the general Android quick menu appears.

Swiping down from the top of the touch screen once more, the slider for the display brightness setting appears:
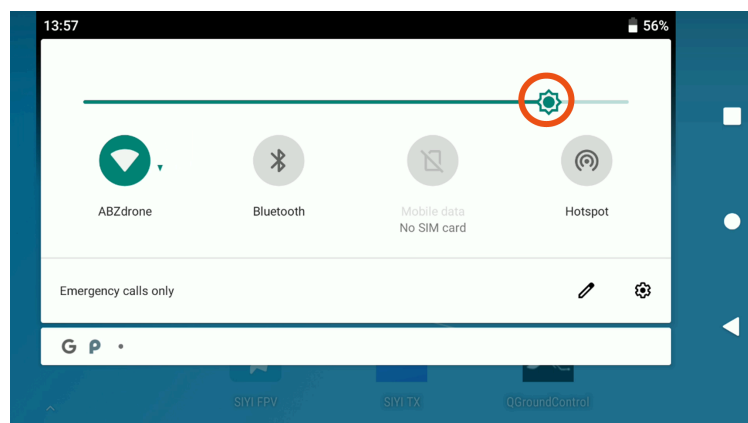
Click on **Settings (gear icon)** then scroll down to the **Sound** menu and tap on it to show the sliders for volume control functions.
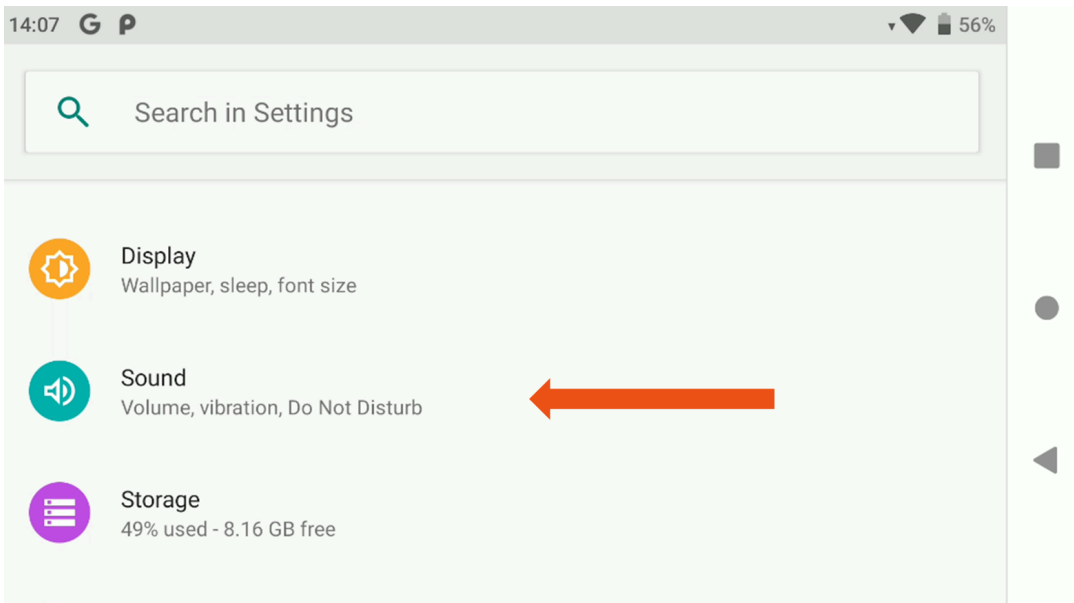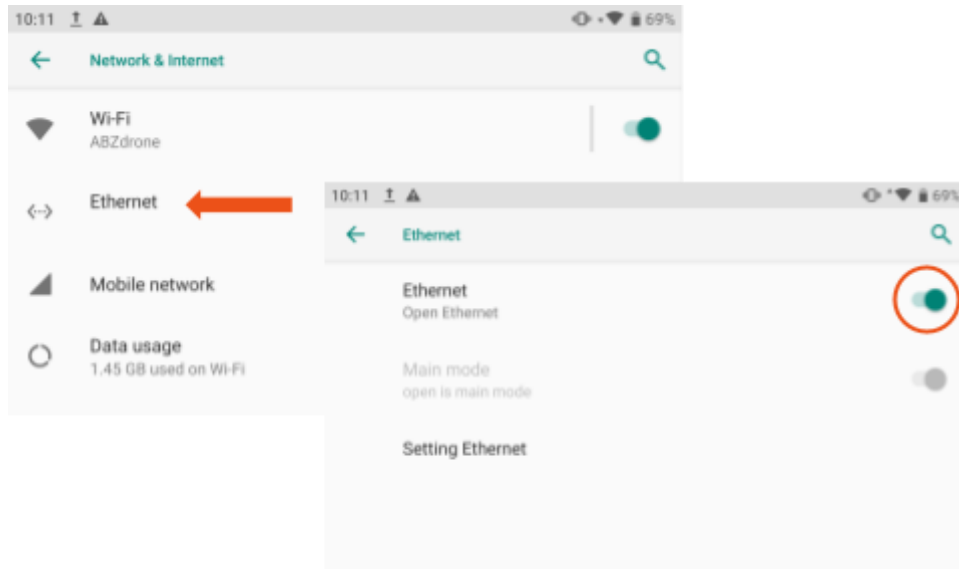

Media volume controls the ABZ Control application's alerts and information volumes. We highly recommend this always be set to the maximum volume.

Network settings

To ensure the proper functioning of the ABZ Control application, the Ethernet connection must always be turned on. This setting is available under *Android Settings > Network & Internet.*

Internet connection

The remote controller can access the internet via Wi-Fi or Bluetooth connection, e.g. shared from a router, mobile phone, tablet, or laptop.

These options are available in the Android's Settings menu (by swiping down from top), by long pressing the Wi-Fi or Bluetooth icon, or by tapping the gear icon.

In the submenu, the function can be switched on/off and the available devices can be connected. Wi-Fi only works on 2.4GHz networks. If the controller does not recognize the Wi-Fi from your mobile device, using Bluetooth connection for internet access is recommended.

### To set up the Bluetooth connection for internet access:

1. Turn off Wi-Fi on the controller.
2. Turn on Bluetooth hotspot / internet sharing on your mobile device.
3. Turn on Bluetooth on the controller and pair the two devices.
4. If your device is connected to the controller, you need to set up the internet connection.
5. Tap on the gear icon next to the device name, then turn on the Internet access.

ABZ Control Software Overview

The C10 is compatible only with the controllers provided by ABZ Innovation with specialized ABZ Control software. Other devices or applications are not compatible for controlling the drone and, therefore, are prohibited from use with the drone.

No software update is needed before and during operating the drone; future updates are only optional. Any future software updates will not affect the control and flight functions. Software update procedures are explained and guided in the documentation of the update package. All information and files are available at: abzinnovation.com/updates. Please check this website if you are looking for software or firmware update options.

Start the ABZ Control flight control and planning application by clicking on its icon on the home screen.
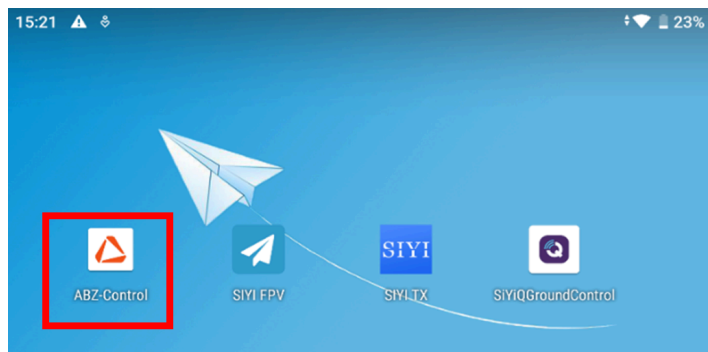
After starting the ABZ Control application, you will receive a pop-up window with the message: Allow ABZ Control to access USB to UART Controller. Click on OK.
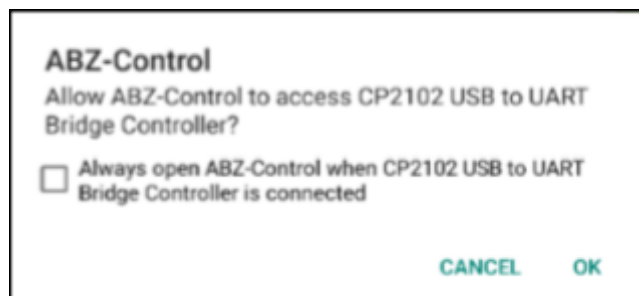
After launching the application, the following screen will be displayed: In the top menu bar, you will see the **Flight view and the Settings** icons**.**

After turning on and connecting the drone, you will find additional status icons at the top: vehicle messages, GPS status, Drone Battery status, and Payload status. On the left side of the top bar, a red no-entry sign indicates that the drone is still preparing its systems for the flight. If the icon changes to a green check mark, the drone is ready and can be armed.

The drone battery icon serves only as an indicator and shows an approximate value. During the flight, the pilot must monitor the battery voltage, which should always be above 43.5 V, even when flying with the Maximum Take-off Mass (MTOM). When the battery voltage level drops under 43.5 V, start returning and landing the drone.

The state of the drone battery should also be monitored before the flight using the charging indicator LEDs on the battery. We recommend starting the flight with a minimum of 80% battery charge.


The real-time altitude of the drone, based on either barometer or GNSS sensors, is displayed in the bottom-right corner of the screen. For more information regarding the altitude control methods, see page 34.

In the bottom-left corner of the screen, the current status of the Automatic Distance Control System is displayed. This system can have three states: Disabled, Off, and On.

For more information about the Automatic Distance Control System, see page 38.

To support the pilot, the live camera view is shown in the center of the screen for better visibility during operation.
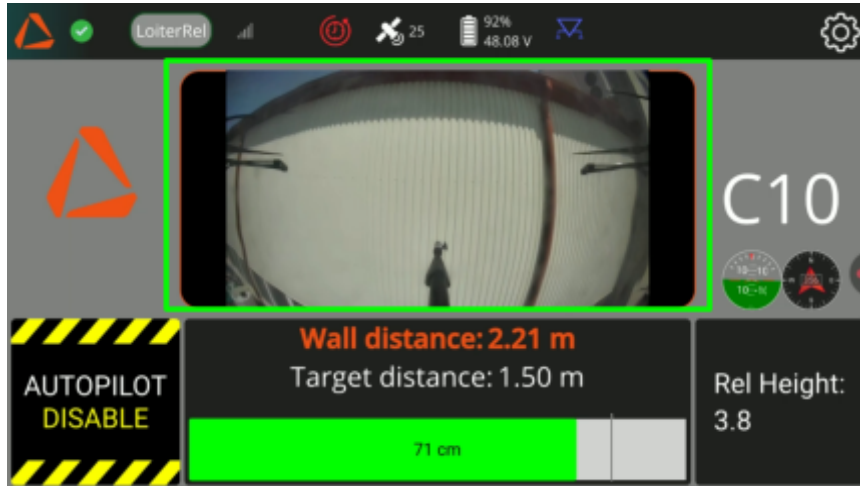
The distance from the wall can be monitored during flight using the display bar at the bottom of the screen.

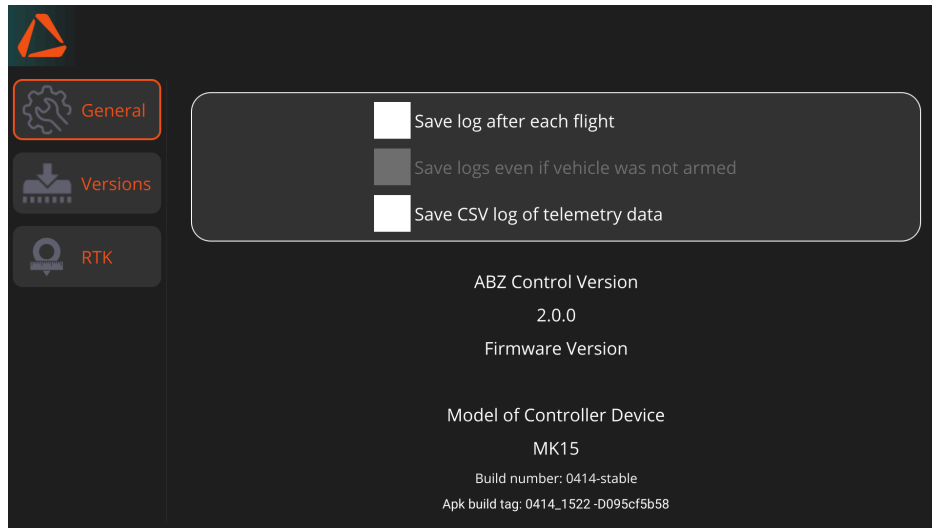A color bar at the bottom of the screen visualizes the distance of the drone from the wall.
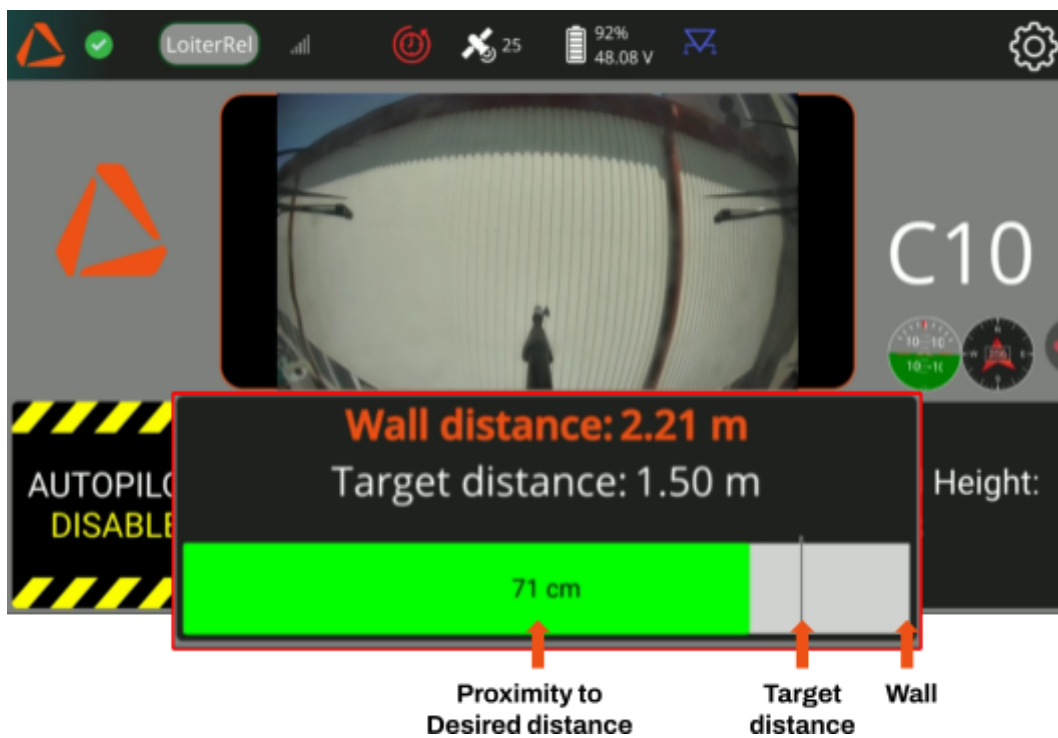
- The right edge of the bar represents the wall surface. The thin strip in the middle indicates the desired distance.
- The value displayed as **"Wall distance"** shows the drone's current distance from the wall.
- The value displayed **inside the bar** shows the amount of deviation from the desired distance.
- The bar's color changes to indicate the drone's proximity to the desired distance:
    - **Red:** The drone is far from the desired distance or has exceeded it.
    - **Yellow:** The drone is getting closer, within 2 meters of the desired distance.
    - **Green:** The drone is within 1 meter of the desired distance. The **automatic distance control** function can now be activated.

Settings

You can change the user interface settings (e.g., language or units of measurement) and configure the default behavior of your drone or payload setup in the Settings menu. To access the Settings, tap the gear icon in the top-right corner of the screen.
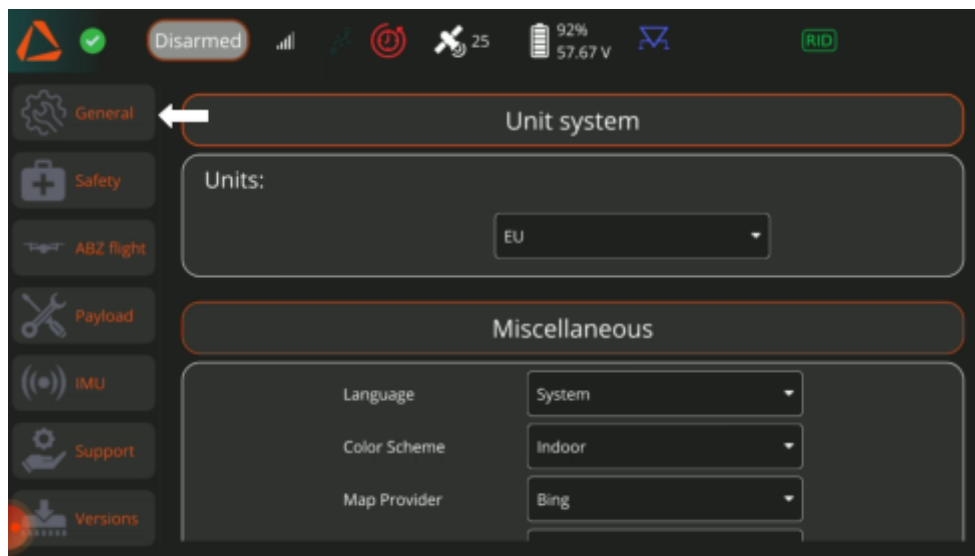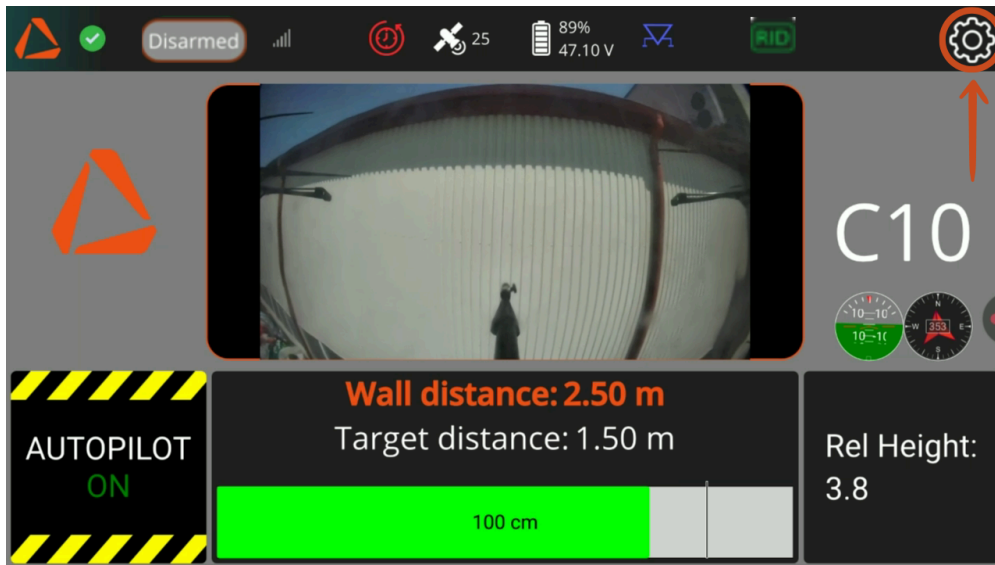
The current software version of your drone is displayed at the bottom of this page. If you contact our Support Center with an inquiry regarding your drone, you will be required to provide this information. The same details are also accessible via the *Settings > Versions* menu.

General

Versions

RTK

Save log after each flight

Save logs even if vehicle was not armed

Save CSV log of telemetry data

ABZ Control Version
2.0.0
Firmware Version

Model of Controller Device
MK15
Build number: 0414-stable
Apk build tag: 0414_1522 -D095cf5b58

Safety – Setting up FailSafe

When using a UAS, unexpected events may occur that require intervention. The FailSafe settings are required by law, primarily to prevent personal injury and property damage. Under *Settings > Safety*, always check and configure the FailSafe settings before every new flight or mission.

- **General failsafe:** you can set what the machine should do in case of losing the remote controller's signal
- **Return to Launch:** set parameters for automatic return to home
    - Specify if current or specified altitude is desired.
    - Specify if the drone should wait and loiter above the takeoff position before landing.
    - Final land stage altitude should NOT be other than 0.
    - Specify the final land stage descend speed (limited by the drone's limitations).
    - **Prearm checks:** Arming checks are meant to check all the functions and systems necessary for arming and flying the drone safely. All the prearm checks listed in this section are essential and mandatory for safe operation; do not change these settings.

Action functions:

- **None**: the drone does not take any action itself. It remains in the actual flight mode.
- **Land:** the drone lands at the actual position and disarms itself after landing.
- **RTL:** the drone switches to RTL mode, and following the Return to Launch settings, it flies back to the takeoff position, then lands and disarms itself after landing.

RTK configuration

In the **RTK** menu, you can set the LoRa radio frequency you would like to use with the Emlid RS base station. Ensure that your Emlid RS base station is configured to Output: LoRa, and that the frequency matches the value specified here.

If you are not using an Emlid RTK base station, the RTK Source Type should be set to **None**.
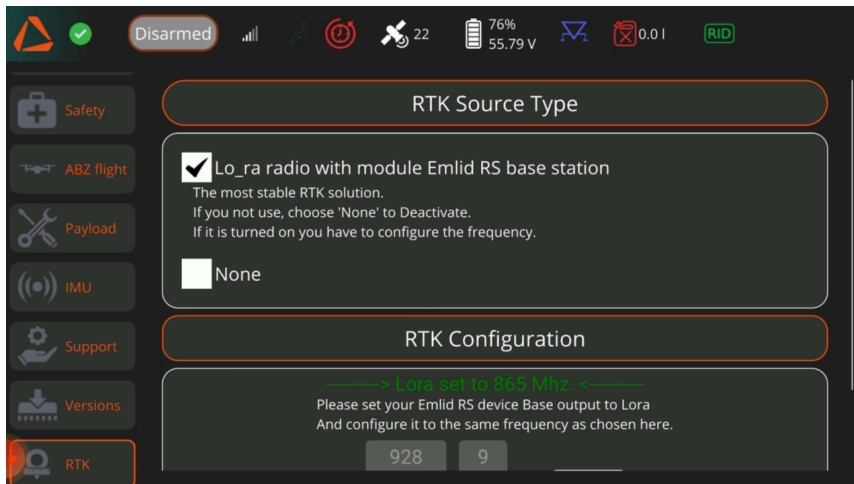
Abz Flight - Relative Altitude Control

In the ABZ Flight menu, under Relative Settings, you can specify the primary height source for the relative altitude control method. This setting can only be changed when the drone is grounded and disarmed. Use GNSS only if flying with an RTK source (e.g., an Emlid base station). For more information about the different altitude control methods, see "Altitude Control" (page 34).
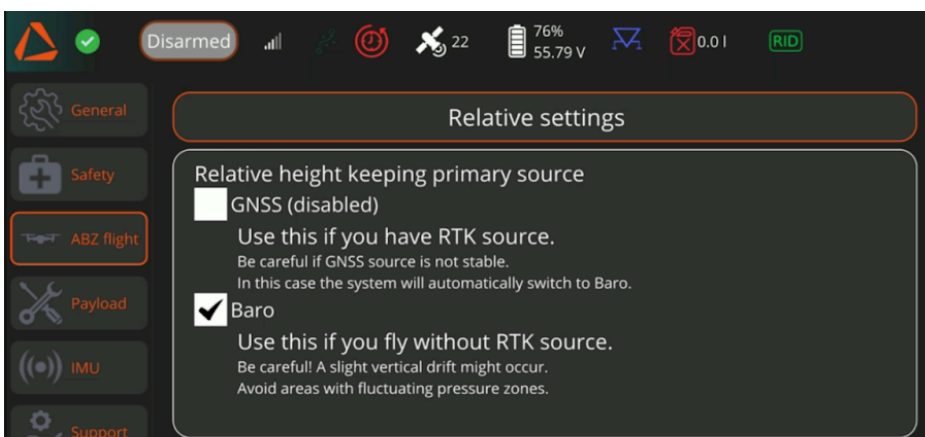
Software versions and Update

You can check the current drone firmware and ABZ Control software versions under **Settings > Versions.** If you contact our Support Center with an inquiry regarding your drone, you will be required to provide this information.

ABZ Innovation communicates all new software releases via email. Only perform updates when instructed to do so by ABZ Innovation.

Payloads

You can define the target distance for the Automatic Distance Control System under Settings > Payload. (For further information about the [Automatic Distance Control System](#), see page 38).
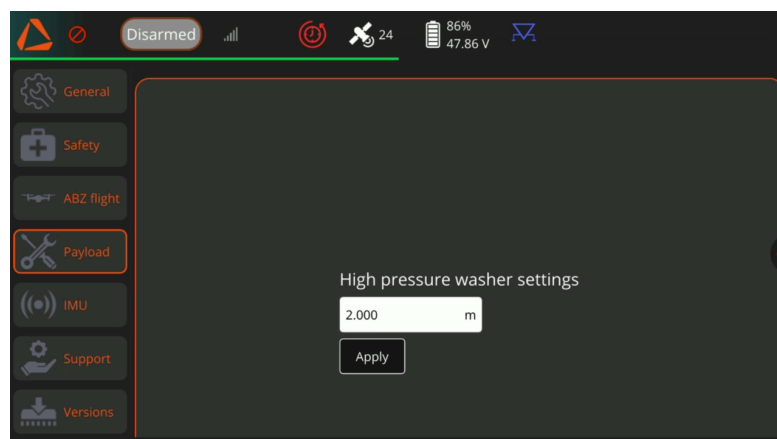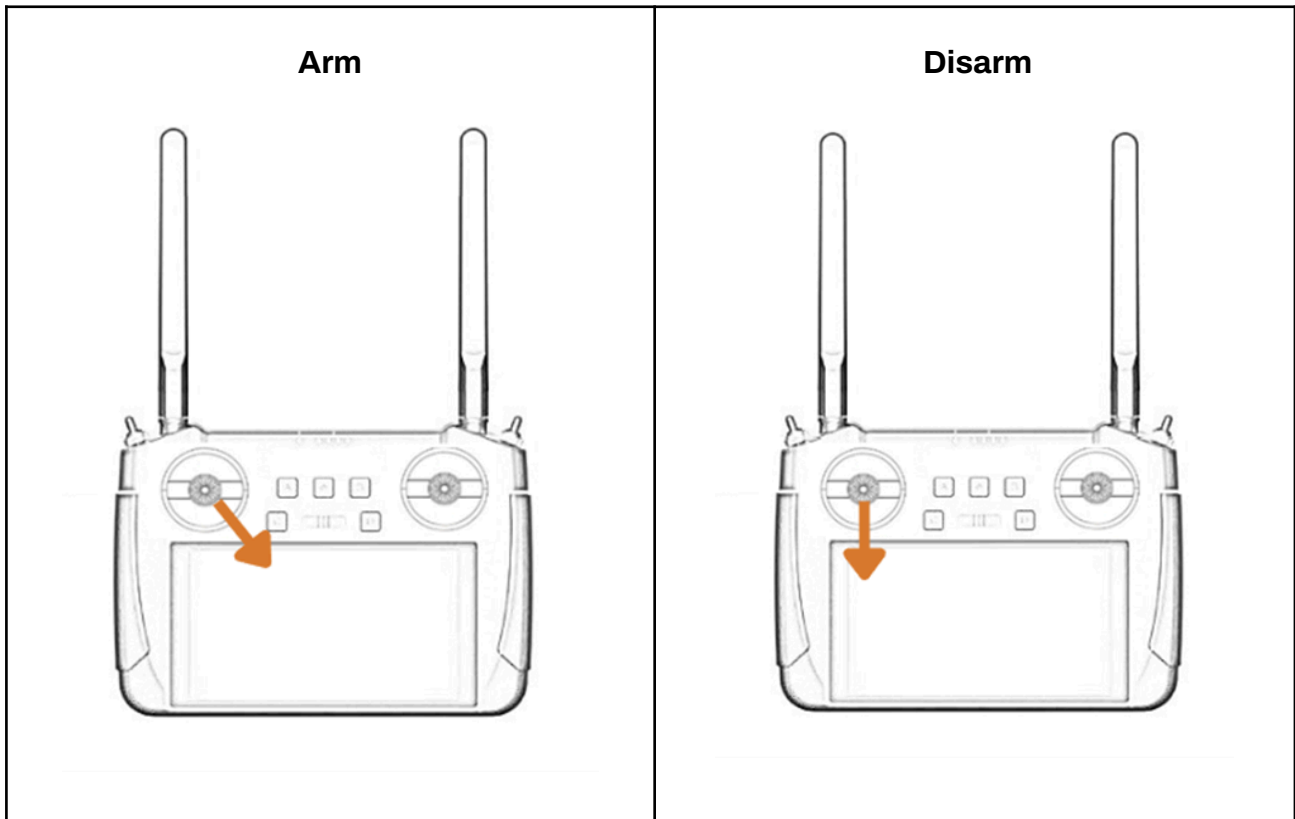
Controlling the drone

It is only permitted to operate the drone in full compliance with this entire operator's manual and specifically the checklists.

Default control (mode 2)

Left stick	Right stick
Up/down	**Forward/backward**
Rotation	**Left/right**

| Arm	Disarm
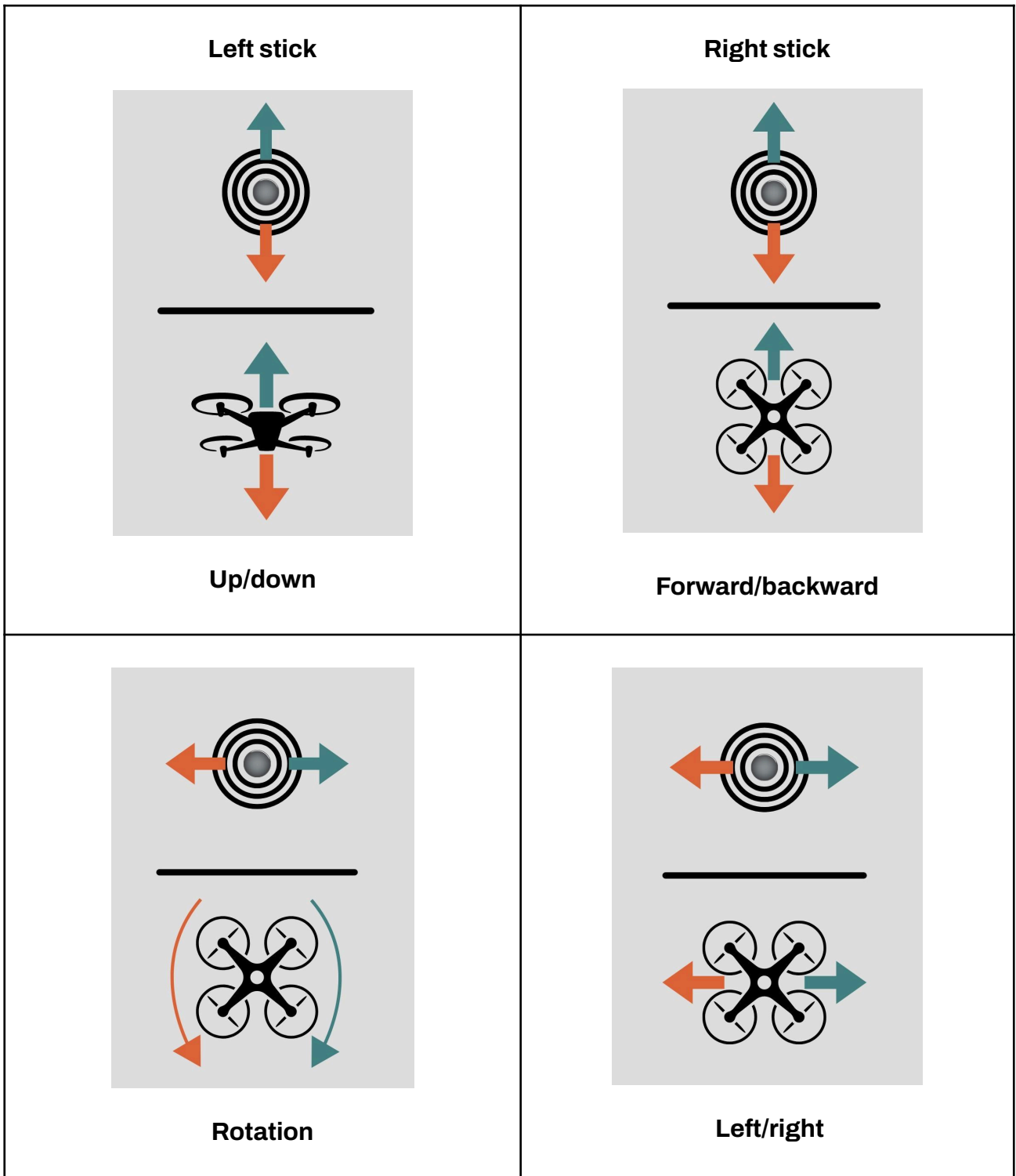
Manual flight commands:

Emergency stop: In case of emergency, push the **C button and D button**. The motors will stop immediately, and the drone will crash into the ground.

The drone's pitch and roll angles, turning radius, climb, and descend speeds are limited by firmware in order to ensure safe flight. The pilot can safely fly the drone within all possible pilot inputs, no extra limitations are needed to implement manually.

- **Takeoff:** Switch to "Armed" mode by pushing the left control stick fully to the **down-right position** until "Armed" is shown on display, then release.

- After the motors are started, fly the drone manually by controlling it with the left and right sticks in Mode 2 by default and take off to a safe height (at least 2m).

- **Land: Manually** control the descent speed and **slow it down** before reaching ground.

- After landing, switch to **„Disarmed"** mode by pushing the **left control** stick fully to the down position until „Disarmed" is shown on the display and the motors are completely stopped, then release.

Make sure to release the stick after arm / disarm immediately, otherwise the system will detect your action as accidental and switch back to the mode previously selected.

When you arm or disarm the drone, a large orange text appears on the screen, notifying you of the drone's status change:
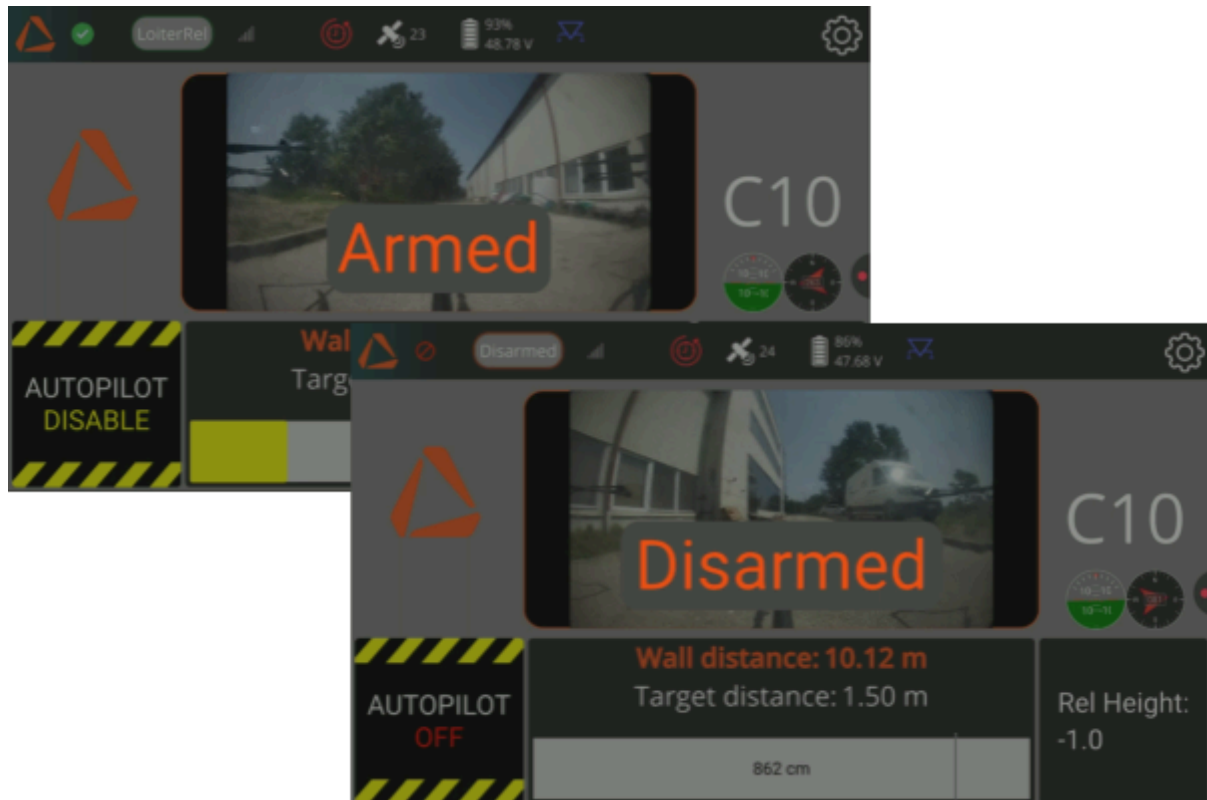
Altitude control

Depending on the availability of RTK correctional data trough an Emlid RS Base station, you can choose between three altitude control methods.

- Barometer based Relative
- GNSS based Relative

By default, Relative Altitude Hold mode uses barometric measurements as the primary height source. The drone's altitude is maintained relative to the takeoff point. The pilot must be aware of altitude variations caused by atmospheric and weather changes.

If you are flying with an **Emlid base station using correction data,** the drone can rely on GPS information as Primary Height source.

You can enable this mode in **Settings > ABZ Flight** when the drone is grounded and disarmed.
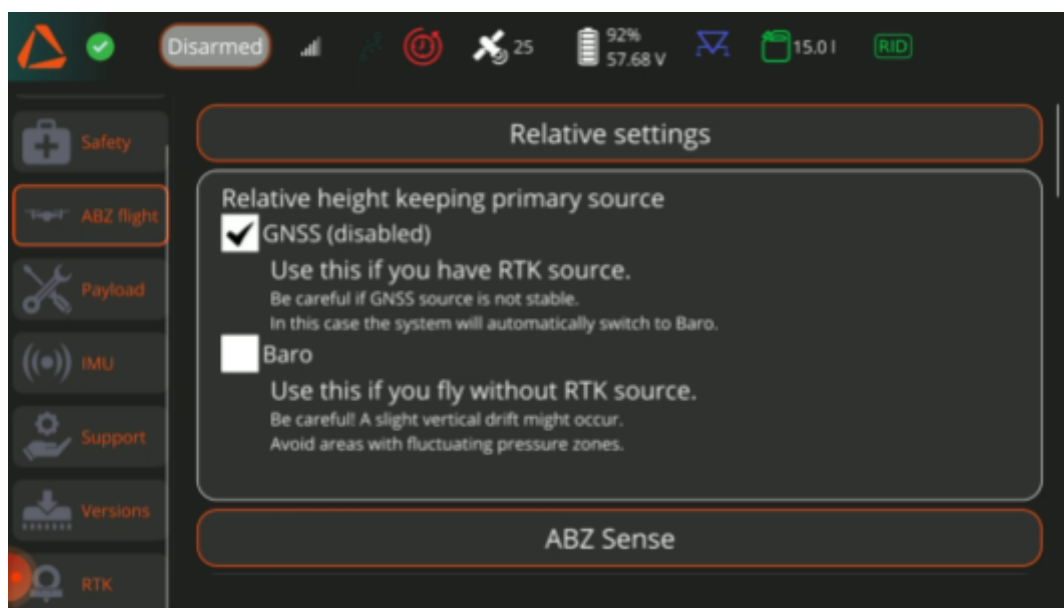
If Relative Altitude is selected, the drone relies on either barometer data or GNSS for altitude control, depending on the settings in ABZ Flight. Use GNSS only when flying with an RTK base station. If GNSS data becomes unreliable, the drone will switch back to barometric altitude hold.

In Return to Launch (RTL) flight mode, the drone will use the relative altitude hold method.
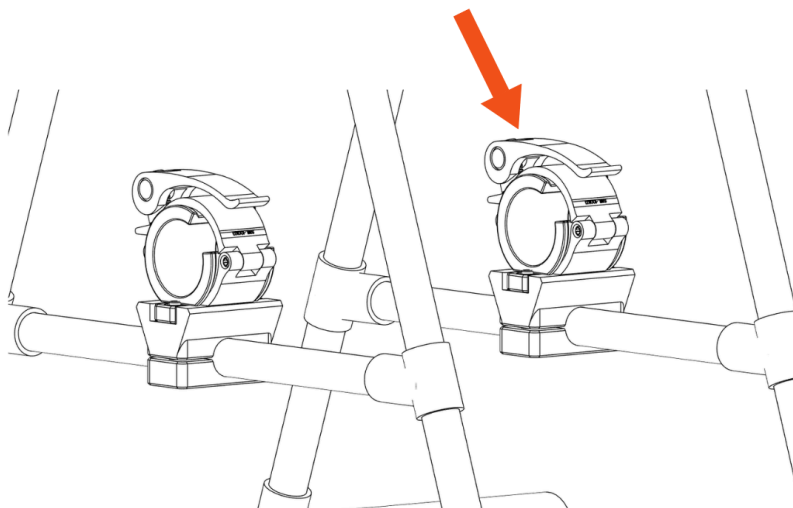
Cleaning System installation

Please follow this manual to safely and correctly install and remove the lance on your ABZ Innovation C10 cleaning drone.
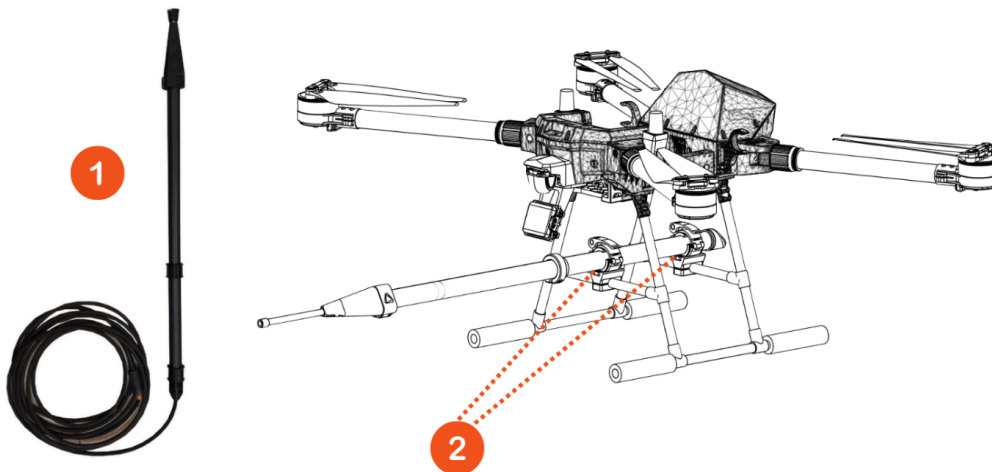


1. Cleaning lance
2. Mounting clamps

Assembly Instructions

1. Open the mounting clamp using the quick-release lever to prepare the drone for assembly.

2. Carefully insert the lance into the mounting clamp, starting from the rear.

3. Close the rear mounting clamp using the quick-release lever, but do not tighten it fully. Leave it slightly loose to allow for manual adjustment of the lance if necessary.

   You can adjust the tightness of the mounting clamp by turning the open quick-release lever.
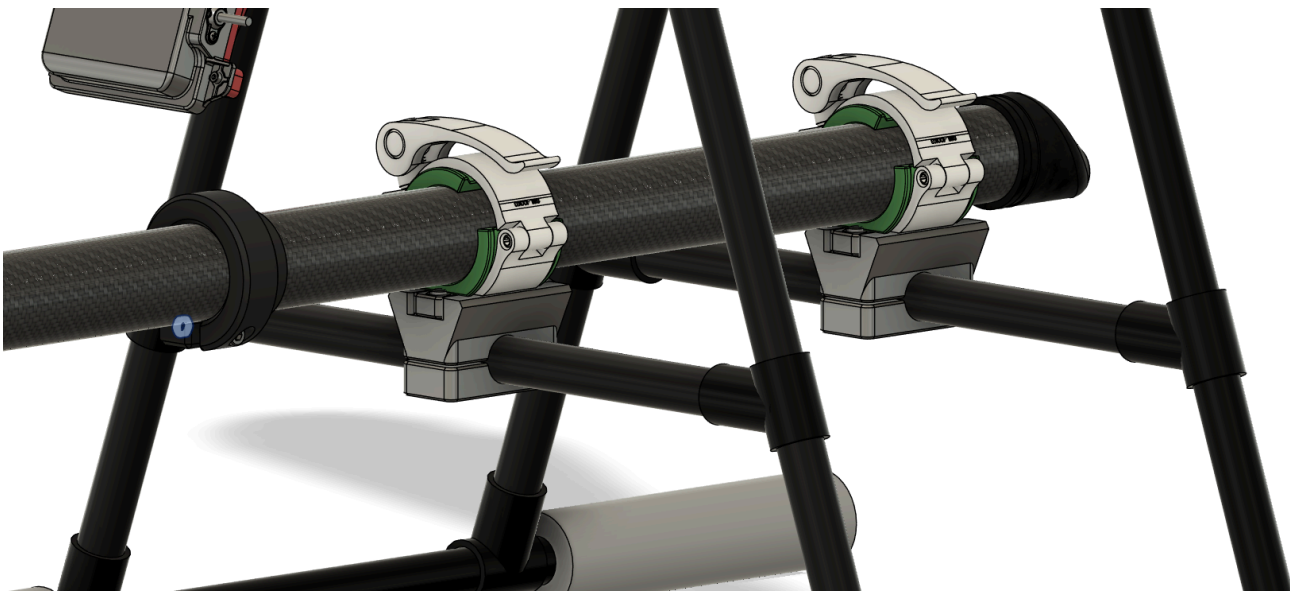
IMPORTANT: The lance must be in the pre-determined position during takeoff. Improper use will result in the drone becoming uncontrollable!

5. Secure the Mounting clamps firmly.

Lance Removal

1. Unlock both quick-release levers to prepare for the removal process.
2. Carefully remove the lance from the clamps.

Changing the nozzle holder

Your C10 drone comes with two types of nozzle holders (straight and tilting). Before changing them, ensure that the screw on the downward-facing side of the plastic housing is properly tightened to 3.2 Nm using a 5mm hex head tool. When securing the nozzle holder, do not apply excessive force—tighten it by hand only.

Adjusting the metal extension tube

If you are using the C10 with the standard nozzle and require it for your operation, you can adjust the length of the metal extension tube enclosed in the lance to extend below the lances head. To do so, loosen the screw on the downward-facing side of the plastic housing.

F (1:1)
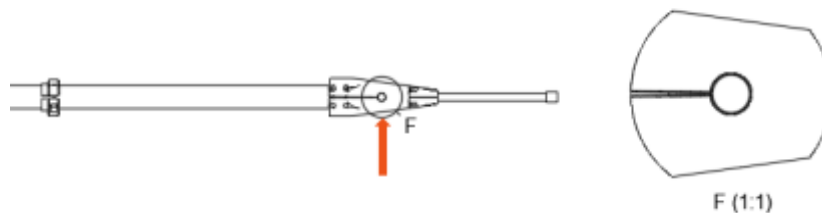
IMPORTANT: Using the tilting nozzle holder is prohibited in extended position. Please use the tilting nozzle only in fully retracted position of the metal extension tube! Also please make sure that the limiter ring on the lance touches the outer side of the front quick release clamp.

F (1:1)
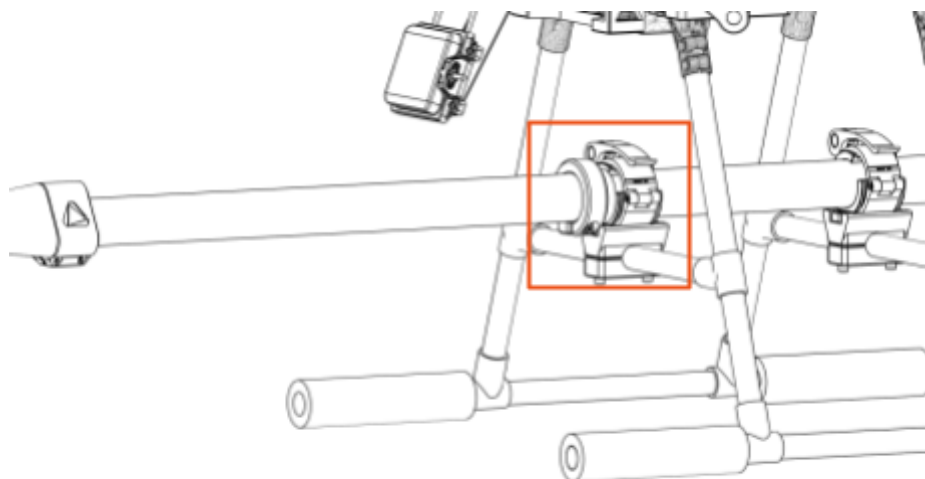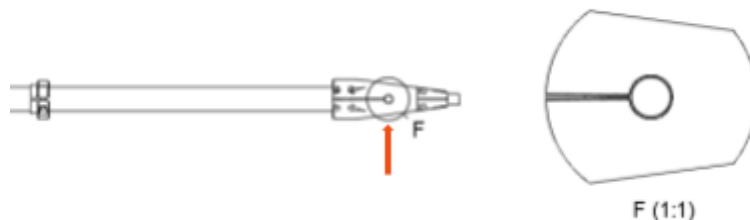
Automatic Distance Control System (Radar-Based)

The **C10 drone is equipped with an automatic distance control system** that uses radar technology to support safe and efficient washing operations.

The automatic distance control system is a **pilot-assist feature** designed to improve operational safety and precision. By continuously measuring the distance between the drone and the surface being cleaned, the system helps maintain a consistent working distance and prevents dangerous proximity.

The radar:

The front-mounted radar on the drone measures the distance to the surface being cleaned. Note that this measurement is taken from the radar's position—not from the tip of the lance.

US-D1 Radar, mounted on the front of the drone, can determine the distance to the surface with an accuracy of 2-6cm, from 0.5m to 50m. It has a horizontal viewing angle of 43° and a vertical viewing angle of 30°.

Important:

This system is not a substitute for manual control. It is intended as a support tool and does NOT autonomously fly or manage the drone.

The pilot remains fully responsible for safe and accurate operation at all times.

The target distance can be set in the **ABZ Control > Settings > Payload with the value of the High pressure washer settings.**

The distance will be measured from the radar, not from the tip of the lance!
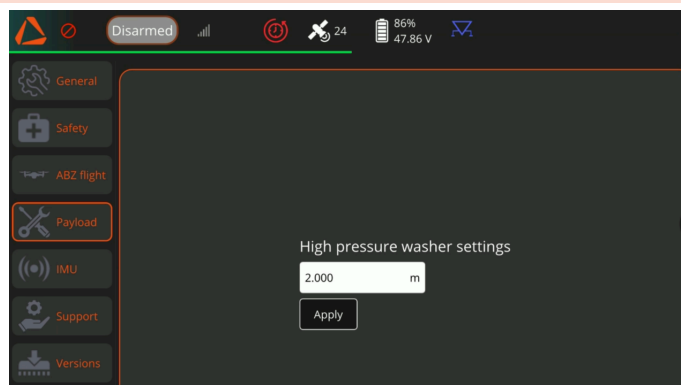
The Automatic Distance Control System has three states: Disabled, Off, and On. After restarting the drone, the system defaults to the Disabled state. To enable it, press **Button D**.

Never arm the drone with the Automatic Distance Control System activated (status: ON). Before landing, always turn off the Automatic Distance Control System!

Key Automatic Distance Control System Functions:

1. **Distance Maintenance:**
   Keeps the drone at a constant distance from the target surface during cleaning, ensuring optimal washing performance.

1. **Emergency Response & Error Handling:**
   - Automatically moves the drone away if it gets too close to the surface due to sudden external factors (e.g., gusts of wind).
   - Detects and responds to potential pilot errors to reduce the risk of collision.

If an anomaly is detected—caused by a hardware/software interruption (e.g. damaged radar or faculty part) or Operational interruption (e.g. measuring past the edge of a wall) —the system will return to the Disabled state.

During flight, a color bar at the bottom of the screen will help you find the correct starting operational distance from the wall.

The bar itself provides a quick visual guide. The right edge represents the wall, and a thin strip in the middle marks your target distance.
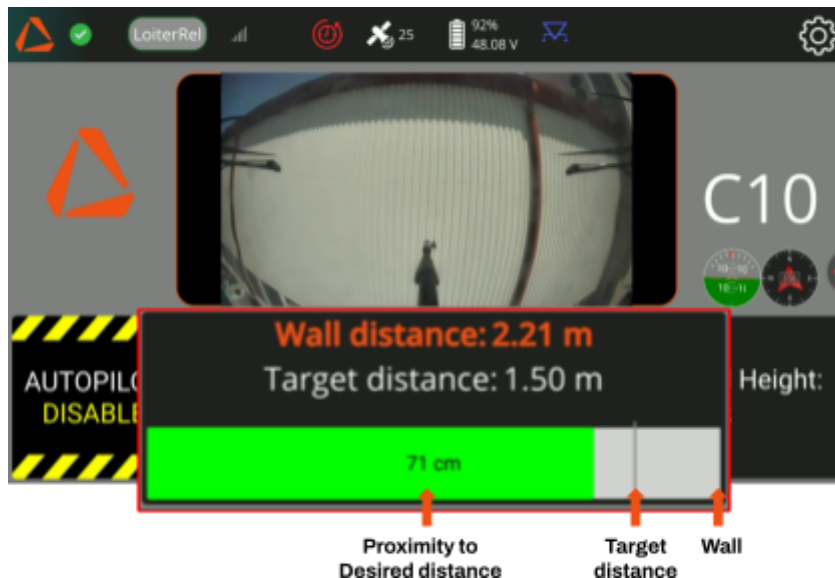
As you pilot the drone, the bar will change color to indicate your position relative to this target.

- **Red:** The drone is far from the desired distance or has exceeded it.
- **Yellow:** The drone is getting closer, within 2 meters of the desired distance.
- **Green:** The drone is within 1 meter of the desired distance.

Once the bar turns Green, the drone is within 1 meter of the desired distance, which is the correct position to begin work. At this stage, you can safely activate the Automatic Distance Control function to have the drone hold its distance from the surface automatically.

If enabled (with the status showing 'OFF' in the top-right corner of the screen), the pilot can activate the Automatic Distance Control by setting the top-right 3-position switch to its middle or lowest position. The system's status will then change to 'ON'. In this mode, forward and backward stick movement is disabled for the pilot.

During flight, a color bar at the bottom of the screen will help you maintain the correct operational distance from the wall.

Challenges Posed by Irregular Surfaces

The drone's onboard radar and positioning systems rely on consistent, reflective surfaces to accurately determine distance and orientation. If the target surface is irregular—such as leaky, broken, or incomplete walls—it may scatter or absorb radio waves, resulting in poor signal return and degraded positional accuracy.

Key Issues:

- Low Reflectivity: Surfaces that do not reflect radar signals effectively (e.g., porous materials, holes, gaps) reduce navigation precision.
- Signal Noise: Structural irregularities may introduce interference or false readings.
- Weakened Radar Stability: Fragmented or uneven surfaces compromise the reliability of distance measurement.

If radar-based control is unreliable due to surface inconsistency, turn off the automatic distance control, and switch to manual flight mode to continue the operation.

Important: Manual operation should only be attempted by experienced pilots who are familiar with proximity-based flight controls and obstacle avoidance.

Emergency Response & Error Handling

If the drone detects abnormal operation—caused by a software error, hardware failure, or operational mistake—it will immediately alert the pilot. In the event that an internal system component fails to function as expected, the automatic distance control will be deactivated until the issue is resolved. Possible causes of such failures include:

- A damaged radar sensor
- A faulty internal component

An operational interruption may occur due to an emergency caused by **pilot error** or a **sudden environmental change**. Depending on the severity and urgency of the failure, the drone may either perform an autonomous motion override or return full control to the remote pilot.

- **Drone approaching the wall at a critical distance**
  Interruption: The drone will automatically push backwards at maximum speed until a safe distance is restored.
- **Radar drift causes false distance readings when near the edge of the wall surface**
  Interruption: The automatic distance control will shut off.

IMPORTANT: Strong and unpredictable wind gusts or turbulence may occur near building edges. These conditions can cause abrupt or unstable drone movements that must be carefully managed by the pilot.

Washing system operation

Operating the C10 drone with the high-pressure washing system is a two-person job requiring a Pilot and a Helper/Supervisor. Seamless coordination between both team members is essential for ensuring a safe and efficient cleaning process from start to finish.

Roles and Responsibilities

Pilot: is responsible for controlling the drone's flight and uses standardized hand signals to communicate with the Helper or Supervisor.

Helper/Supervisor: operates the high-pressure washing system, turning it ON and OFF as needed. They also manage and adjust the high-pressure hose and observe the environment to support safe drone operation.

Operational procedure

For optimal positioning of the drone, mark a 6-8 meter wide section of the wall to be washed and position the hose system in the middle of that section on the ground. Keep the drone within a +/- 3-4 meter horizontal range from the ground system's position as you move up and down the washing area.

Once a section is complete, power down the drone, then reposition both the drone and the hose system to the center of the next 6-8 meter section before resuming operation.

1. Preparation

- Before any flight, conduct all required [pre-operation safety checks](#) (see page 45) to ensure the operational readiness of the drone, equipment, and the safe operational zone and environment.
- Clearly assign the roles of Pilot and Helper/Supervisor and review the standard hand signals for communication.

2. Hose Setup

It is critical to position the high-pressure hose strategically to ensure free water flow and give the drone maximum maneuverability.

The high-pressure hose must be free of lumps, kinks, and overlaps that could restrict water flow or snag during flight.

Before starting the system, vent all hoses to purge any trapped air.

Important: To allow for unrestricted water flow and optimal maneuverability, try to position the high-pressure hose in a pattern that avoids sharp bends and allows it to move freely.

The hose should be placed at the foot of the surface to be washed (maximum 6–8 meters in width), preferably centered, to minimize lateral pull on the drone.

3. Flight and Cleaning Operations

Before takeoff, ensure that the automatic distance control is set to Disabled/OFF status.

- During ascent, the Helper/Supervisor should stand by, carefully monitoring the high-pressure hose to ensure it feeds out smoothly without interfering with the drone.

When moving the hose with a strong force, move the drone forwards/backwards only. In case of sideways pulling, the counter-force of the hose will force the drone to rotate, which may pose a safety hazard.

- Once the drone reaches approximately 5 meters from the surface, the pilot can give the designated hand signal, and the helper or supervisor should start the high-pressure washing system.
- With the drone in a perpendicular position, carefully approach the target surface until you are 1 meter beyond the predefined target distance.
- Turn on the Automatic Distance Control System.
- You can start the operation.

4. Concluding the Operation

1. To begin the landing process, automatic distance control must be switched off.
2. Fly to a safe distance from the wall before proceeding to switch off the washing system.

After switching off the Washing System, the drone may slide forward 0.5 to 1 meter due to the sudden loss of counterforce.

3. The Helper/Supervisor can turn off the high-pressure system.
4. During landing, the Helper/Supervisor must ensure the high-pressure hose is safely arranged on the ground to prevent any obstruction or entanglement during the drone's descent and landing.

Below a height of 20 cm, the drone should only be moved downward—not forward, backward, or sideways—as any lateral movement may pose a safety risk.

Flight

If needed, check Failsafe settings and adjust them according to the actual flight task and surroundings.

Set the display brightness in accordance with the lighting conditions. Every data on the display should be readable even in direct sunlight. Turn off unnecessary nearby Wi-Fi and radio equipment to minimize interference.

If all the necessary conditions for the flight are ensured, you can then enter the flight view to start the flight, switching to "Armed" mode.

Always fly in GPS assisted flight mode, if possible (e.g. Loiter).

In case of abnormality in Loiter mode, immediate switching to AltHold (C button) mode is required by the pilot to take full manual control and to ensure the safe flight and landing of the drone.

If any flight system errors occur during the flight, the controller shows a pop-up message with information about abnormalities.

If the GPS system fails during flight, the „GPS glitch" pop-up message will be shown on the screen, the pilot must switch back to AltHold flight mode and safely land the drone.

In emergency situations, the pilot must operate the drone manually in the safest available manner, specifically taking care of personal and property security. The pilot must fly the drone away from potential risks, applying careful, slow stick inputs and flight speeds, find a safe area, and land the drone with a slow descent rate.

In case of a „Potential thrust loss" message, the pilot must land the drone as soon as possible, operating it with slow and smooth motion.

Before flight, tasks and inspections

- Determine the flight location.
- The task to be performed is properly analyzed.
- Permits applied for and obtained.
- Visual inspection of the area performed
- Inspect the surface to be cleaned: If the wall surface is leaky, broken, or incomplete, radar signal stability may be reduced.
- The operational area is secured
- The obstacles in the built environment identified
- Neighbours and other limiting factors identified
- Tools and accessories needed for the work are prepared.
- The pilot is fit and ready to work.
  (IMSAFE: Illness, Medication, Stress, Alcohol, Fatigue, Eating)
- Set the remote controller's sound volume according to the ambient noise.
- Set the remote controller's display brightness according to ambient light conditions.

Pre-arming tasks and inspections

- The meteorological conditions are below the limits of the type AND nature of the activity: temperature, visibility, rain, wind speed, etc.
- Optimum conditions: operation in calm conditions, possibly with light, steady winds. **Recommended wind strength: < 30 km/h**
- General visual inspection and condition assessment of the drone. General inspection: cables, connections, video connection, payload, etc. Payload condition, arms, base structure condition, and whether the bolts are properly tight.
- Condition of blades: clean, not broken, not cracked, no other damage. Visual inspection of the blades, paying special attention to possible mechanical damage and whether the propellers are properly fastened.
- Condition of motors:The coils are copper-colored, not black, no burnt smell, no great resistance when turning by hand, rotation is continuous, not chunky
- Condition of arms: properly secured, not broken or cracked, all fasteners (screws, rivets) in place
- Landing gear condition: not broken, not cracked, not warped, the drone is stable on the landing gear, the landing gear does not wobble on a flat surface. The landing gear and any accessories are securely fastened.
- Washing rod fitted and fixed in place.
- The washing system has been connected to the water source and, if necessary, to the mains electricity supply.
- The high pressure hose is connected to the drone.

- Hose entanglement during flight is a safety hazard. The hose should always be free of knots, and free to move in any direction. The high pressure hose is properly aligned, (6-8 m working with, free to move and free from knots).
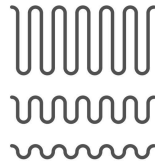
- The remote control antennas are properly adjusted.
- The drone is placed on level ground, away from metal surfaces.
- Checking the batteries: no swelling, correct voltage, properly secured. All batteries charged and checked: radio station, drone, video equipment, and accessories.
- Drone battery status:
  (The state of the drone battery should be monitored before the flight using the charging indicator LEDs on the battery. We recommend starting the flight with a minimum of 80% battery charge).
- Unfold the drone's arms and tighten the fasteners.
- Unfold the propellers symmetrically.
- The remote controller is switched on and correctly set. The remote controller must ALWAYS be switched on before the drone battery is connected.
- Check the radio, telemetry, and video antennas.
- Check the remote controller's battery status, charge level.
- Check the live telemetry data on-screen, check button functions.
- NEVER leave batteries connected for prolonged periods.
- Before arming the drone, leave enough free space, stand at least 20 meters away from it.
- Perform compass calibration if necessary.
- Check the video signal on the display.
- Make sure the device has enough satellite connections.
- Check that the devices installed are working properly.
- Make sure that the task you have chosen is the one you want to carry out, is planned, and properly analyzed.
- Whether the take-off zone is sufficiently cleared.

Post-arming tasks

- 6–8 meter wide work area designated.
- The remote control battery is sufficiently charged.
- The drone's battery is sufficiently charged.
- Camera image check, camera image available.
- Drone is position visible.
- Number of satellites is sufficient.
- Failsafe mode set
- The hose is vented.

Pre departure tasks

- Checking the area before take-off, taking into account possible environmental hazards
- All switches in the correct position before take-off
- Automatic distance control is turned off
  (Right side 3-position switch, up position)
- Washing system is turned off
- External persons and persons involved in the operation are safe.
- Arm the drone and take off.

After take-off and in-flight tasks

- Stabilize and hold the drone at a height of at least 2m.
- Test the left and right rotation functions, forward/reverse movements, right, left tilting.
- Check that the drone is stable and that there are no abnormal vibrations.
- Blades operate smoothly
- The drone is stable in the air (GPS)
- The drone works according to the instructions issued
- Flight data in order (Battery charge, Altitude, Speed, Heading, GPS connection)
- The drone is stable during flight near the surface to be cleaned.
- High pressure washer operation OK

Preparing to operation

- Target Surface at a safe distance (7-10 m)
- High pressure system is turned on

Activating the automatic distance control

- Approach surface to the target distance +1m

- Enable the automatic distance control (D Button)

- Turn on the automatic distance control
  (Right side 3-position switch, middle or down position)

During operation

- If the drone or remote controller battery is low, land the drone in a safe place.
- During the flight, the pilot must monitor the battery voltage, which should always be above 43.5 V, even when flying with the Maximum Take-off Mass (MTOM).
- Battery voltage below 43.5 V:
- When the battery voltage level drops under 43.5 V , start returning and landing the drone.

After operation

- Turn off the automatic distance control
- (Right side 3-position switch, up position)
- Target surface at a safe distance (7-10 m)
- Turn off the washing system
- Check the flight altitude and the maximum allowed distance.

Start landing, tasks and inspections

- Ensure that the automatic distance control is turned off.
- If necessary, pre-adjust the hose.
- The people involved in the operation - and, external persons are safe

After landing, tasks and inspections

- Switch off professional equipment if necessary.
- Switch off the drone by unplugging the battery from the connector.
- Switch off the remote controller.
- Clean the drone thoroughly (batteries, tools, camera, etc.).
- Disassemble, clean, check, and store all professional equipment properly.
- In the flight log, record the flight and any significant events. Accurate completion of this document is mandatory to monitor the operation and lifetime of the drone, and to facilitate properly scheduled servicing (every 300 flight hours).
- Record the nominal voltage remaining in the batteries used. After returning from the field, remove the batteries from the storage box and store them in a cool and well-ventilated place.
- DO NOT STORE batteries overcharged or fully discharged for extended periods of time.

Before first take-off

- General structural, mechanical inspection
- Inspection of propellers one by one, even if there is only minor damage, takeoff is prohibited.
- Tightness of the drone arms' fasteners
- Propellers in an unfolded state
- Visual inspection of the area performed
- Inspect the surface to be cleaned: If the wall surface is leaky, broken, or incomplete, radar signal stability may be reduced.
- Switch on the remote controller, and launch the ABZ Control app.
- When ABZ Control is waiting for the connection, turn on the drone by connecting the battery (the plug must be fully plugged in).
- If you are operating the drone in a country where the remote identification of drones is mandatory, verify in an appropriate application that the Dronetag BS is correctly broadcasting your drone operator ID before take-off (<u>see page</u> 11).

Before every take-off

- Drone battery charge level. The state of the drone battery should be monitored before the flight using the charging indicator LEDs on the battery. We recommend starting the flight with a minimum of 80% battery charge.
- Remote controller battery charge level
- When ABZ Control is waiting for the connection, turn on the drone by connecting the battery
- (the plug must be fully plugged in).
- Check the connection between the remote controller and the drone.
- Verifying **Telemetry** live data (in case of failure, ABZ Control must be restarted).
- Whether the drone is in **Loiter** mode (if not, pres**s button A** to switch).
- You are at a safe distance (at least 10 meters) from the drone.
- The high pressure hose is connected to the drone.
- The hoses are knot-free and properly aligned.

- The Automatic Distance Control System is Disabled/turned off.

- Switch to "Armed" mode by pushing the **left control stick** to the **down-right position**, until
- „Armed" is shown on the display, then release the stick.
- After the motors are started, take off to a safe height (at least 2m).

After take-off

- Compass adjustment by a single 360° rotation around the vertical axis of the drone
- Check the stability and motion of the drone.
- Check the **battery status** and **voltage** frequently during flight.
  - If the drone or remote controller battery is low, land the drone in a safe place.
  - During the flight, the pilot must monitor the battery voltage, which should always be above 43.5 V even when flying with the Maximum Take-off Mass (MTOM). When the battery voltage level drops under 43.5 V, start returning and landing the drone.
- Land the drone carefully and at a safe descent speed.

Before landing:

- The Automatic Distance Control System is Disabled/turned off.

After landing

- Switch to „Disarmed" mode by pushing the **left control stick to the down position**, until „Disarmed" is shown on the display and the motors are completely stopped.
- At the end of the flight, first switch off the drone and then the remote controller.
- The drone can then be folded for transport, make sure that the arms' fasteners are not in contact with the arm holder „C" clamps

Emlid RTK (Optional)

The C10 drone can be equipped with Emlid LoRa system, which can be connected with Emlid RS+ or RS2+ for RTK positioning at centimeter precision.

Setting up the RS+ or RS2+ base is documented at Emlid's support pages:
> https://docs.emlid.com/reachrs2/
> https://docs.emlid.com/reachrs/

When setting up the RS+ or RS2+ base, use exactly the 868.0MHz and 9.11kb/s values as Base output - LoRa settings.

When the system is set up and working correctly, on the drone's controller the GPS Status shows the following based on the accuracy:
- GPS Lock – RTK float
- GPS Lock – RTK fixed

Batteries and chargers

Battery:

Only use batteries purchased directly from ABZ Innovation distributors! This ensures safe operations, full compatibility, appropriate data connection to the drone. Using 3rd party batteries void the drone's warranty.

General informations about the battery:

- 44,4 V nominal voltage

- 16000 mAh capacity

- 15C discharge value

- 12 Cells

Charger:

Only use original ABZ Smart Charger 3000! This ensures safe charge, full compatibility, appropriate data connection to the batteries. Using 3rd party chargers void the batteries' warranty.

- Power output: max. 60A/3000W

- Power Input: 16A/110-230V

- Capable of multiple charges at the same time

- Slow, Normal, Fast charge speed options

- Storage mode option

For continuous drone operation, use a set of 4 batteries. You can charge 2 batteries simultaneously while operating the drone with the remaining 2 (1 active + 1 standby). To ensure long battery life, we highly recommend using balance charging.

Payloads

The operator is solely liable for using only properly secured, correctly connected payloads, accessories, which are approved and compatible for drone use.

It is the pilot's responsibility not to exceed the maximum combined accessories and batteries and payload weight, which is 16.46 kg (specific category)/ 12.64 kg (open category),, thereby not to exceed the MTOM with the fully equipped drone, which is 29 kg (specific category)/24.9 kg (open category).

The payloads must not significantly affect the drone's center of mass, especially, when a heavy payload is mounted. It is highly recommended to install the payloads as close as possible to the drone's center.

Troubleshooting

If any malfunction is experienced, contact an ABZ Innovation service center for further instructions. No repair attempts are allowed by the pilot or operator.

abzinnovation.com/authorized_services/

Replacement parts

Only original replacement parts are qualified, directly from ABZ Innovation.

There are no life-limited parts of the drone, however propellers and motors must be inspected frequently, and in case of abnormalities, replacement is needed.

Other than replacing the propellers and the battery, every repair or replacement should be carried out only at an official ABZ Innovation distributor's service center by a trained and qualified technician.

Never repair any parts of the drone while it is powered on.

List of spare parts and part numbers:

- Battery: ABZ-L10-GP-EC-001 (Normal size)
- Battery: ABZ-L10-GP-EC-002 (Compact size)
- Propeller CW: ABZ-L10-EFT-FR-006
- Propeller CCW: ABZ-L10-EFT-FR-007

Replacing the propellers:

Tools for replacement:

- HEX 4 key
- Threadlocking fluid (e.g. Loctite 243)
- Original ABZ Innovation L10 propellers
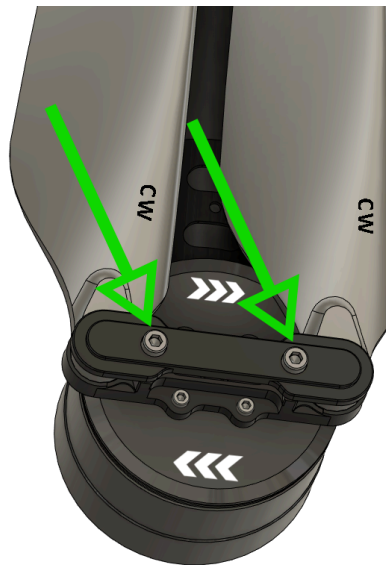
Carefully check the motor and propeller rotational direction. On the motors it is indicated with arrows, on the propellers „CW" or „CCW" are indicated.

Unscrew the two 4mm HEX screws, disassemble the fixing cap of the propellers, remove the propeller's upper washers, remove the propellers and install new propellers, reinstall the upper washer and fixing cap. Clean the 4mm HEX screws from threadlocking residues and apply new threadlocking material (according to the manufacturer's instruction). Tighten the screws until the propellers have zero axial and radial play, but still easy to fold and unfold them.
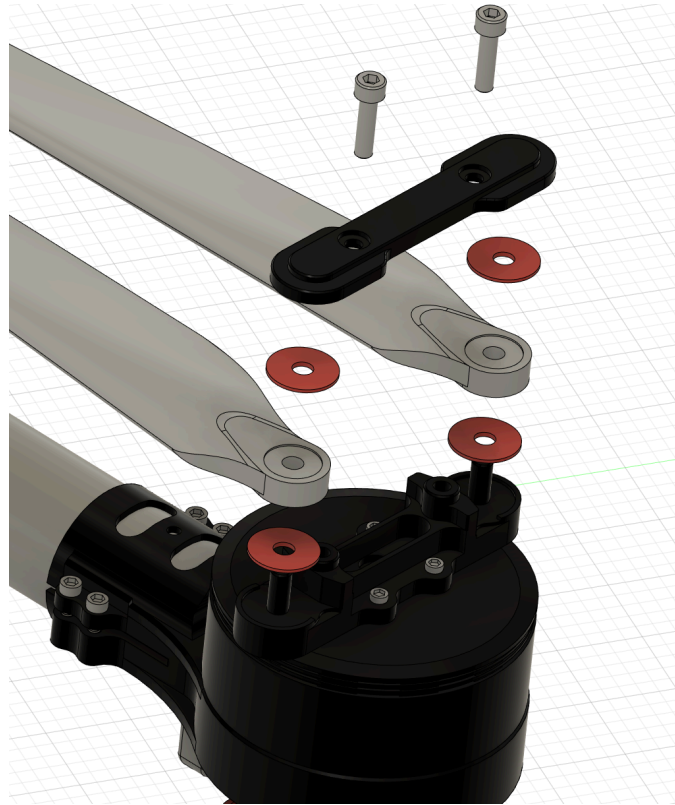
Obtain disposal information directly from local ABZ Innovation Distributors or Resellers. Always follow local regulations regarding disposal and recycling. If a part has ended life cycle or faulty/broken, it must be ensured not to be allowed to be used again, which can be carried out by an ABZ Innovation Distributor or Reseller.

Compass calibration

Compass calibration can be performed under **Settings > IMU > Compass.**
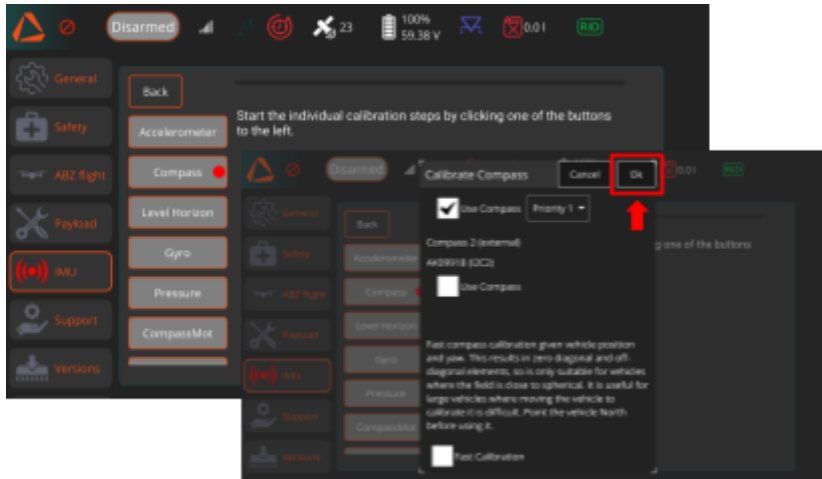
The calibration should only be performed if requested by the software or instructed by the Support Center. Do NOT use Fast calibration!

- The drone must be turned on, in „Disarmed" state.
- Remove any metal (e.g. keys, coins) and electronic object from your pockets.
- The calibration sequence is initiated by pressing the "OK" button.
- Hold and Rotate the drone by hand 360° around all axes, and in both rotational directions
- Until the status bar is complete (usually a 1-2 minute operation).
- The result of the calibration is shown by the calibration quality feedback:
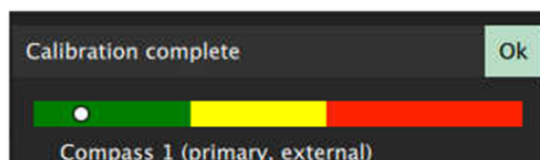
- ○ Green: good quality calibration
- ○ Yellow: medium quality calibration, consider recalibrating
- ○ Red: not acceptable; please recalibrate

After the calibration is complete, do NOT press the Restart button on the interface. Instead, click OK. Wait for the green progress bar to finish loading, then restart the drone by powering it off and on using the battery button (short press followed by a long press).

If you have any questions, please contact us: support@abzinnovation.com

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